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ISAAC HAYS, M.D.,

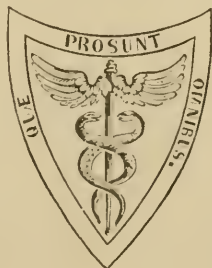
FELLOW OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA; MEMBER OF
THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA, AND OF THE AMERICAN
PHILOSOPHICAL SOCIETY; ASSOCIATE FELLOW OF THE AMERICAN
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TO READERS AND CORRESPONDENTS.

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Contributors who wish their articles to appear in the next number are requested to forward them before the 1st of August.

Compensation is allowed for original articles and reviews, except when illustrations or extra copies are desired. A *limited* number of extra copies (not exceeding *fifty*) will be furnished to authors, *provided the request for them be made at the time the communication is sent* to the Editors.

We have to ask the indulgence of several contributors whose communications we have been compelled to lay over for want of space.

The following works have been received:—

Jahresbericht der Allgemeinen Poliklinik in Wien für 1874. Wien, 1875.

Proposta Intorno La Cura Della Lissa detta Commune Rabbia Canina o Idrofobia. Roma, 1875.

Transactions of the Obstetrical Society of London. Vol. XVI., for the year 1874. London: Longmans, Green & Co., 1875.

Guy's Hospital Reports. Edited by H. G. HOWSE, M.S., and FREDERICK TAYLOR, M.D. Third series. Vol. XX. London: J. & A. Churchill, 1875.

St. George's Hospital Reports. Edited by JOHN W. OGLE, M.D., F.R.C.P., and TIMOTHY HOLMES, F.R.C.S. Vol. V. 1872-4. London: J. & A. Churchill, 1875.

St. Thomas's Hospital Reports. Vol. V. London: J. & A. Churchill, 1874.

The Diseases of Tropical Climates and their Treatment; with Hints for the Preservation of Health in the Tropics. By J. A. B. HORTON, M.D. Edin., F.R.C.S. London: J. & A. Churchill, 1874.

The Forces which carry on the Circulation of the Blood. By ANDREW BUCHANAN, M.D., Prof. of Physiology in Univ. of Glasgow. Second Edition. London: J. & A. Churchill, 1874.

On the Psoriasis or Lepra. By GEORGE GASKOIN, Surgeon to the British Hospital for Diseases of the Skin, etc. etc. London: J. & A. Churchill, 1875.

On the Treatment of Fistula and other Sinuses by means of the Elastic Ligature. By WILLIAM ALLINGHAM, F.R.C.S., Esq., Surgeon to St. Mark's Hospital for Fistula, etc. etc. London: J. & A. Churchill, 1875.

On Pulsating Tumours which are not Aneurismal, and on Aneurisms which are not Pulsating Tumours, being a contribution to the Diagnosis of Aneurism. By T. HOLMES.

The Goulstonian Lectures on Puerperal Fever. Delivered at the Royal College of Physicians, London. By ROBERT J. LEE, M.D., F.R.C.P. London: Smith, Elder & Co., 1875.

Maternal Impressions. A consideration of the effect of Mental Disturbance during Pregnancy upon the Intellectual Development of the Child. By ROBERT J. LEE, M.A., M.D., F.R.C.P. London: Smith, Elder & Co.

A Manual of Diet in Health and Disease. By THOMAS KING CHAMBERS, M.D. Oxon., F.R.C.P. Lond., Hon. Phys. to H. R. H. the Prince of Wales, Consulting Phys. to St. Mary's and the Lock Hospitals, etc. Philadelphia: Henry C. Lea, 1875.

Cyclopædia of the Practice of Medicine. Edited by Dr. H. VON ZIEMSEN. Vol. III.—Chronic Infectious Diseases. ALBERT H. BUCK, M.D., New York, Editor of American Edition. New York: William Wood & Co., 1875.

A Series of American Clinical Lectures. Edited by E. C. SEGUIN, M.D. No. III.—Pneumo-Thorax. By AUSTIN FLINT, Sr., M.D., Prof. of Prin. and Prac. of Med. in Bellevue Hosp. Med. Coll., N.Y. No. IV.—Rest in the Treatment of Nervous Diseases. By S. WEIR MITCHELL, M.D. New York: G. P. Putnam's Sons, 1875.

Sex in Industry; a Plea for the Working-Girl. By AZEL JAMES, Jr., M.D., Member Mass. Med. Soc., etc. Boston: James R. Osgood & Co., 1875.

Circular No. 8, War Department, Surgeon-General's Office, Washington, May 1, 1875. A Report of the Hygiene of the United States Army, with descriptions of Military Posts. Washington, 1875.

On Compression of the Foetal Head by the Forceps and Cephalotribe. By HUGH L. HODGE, M.D., Philadelphia. New York, 1875.

The History of the Philadelphia School of Anatomy, and its Relations to Medical Teaching. By WILLIAM W. KREN, M.D., Lecturer on Anatomy and Op. Surgery in Phila. School of Anat. Philadelphia: J. B. Lippincott & Co., 1875.

On Certain Morbid Alterations of Mucous Membrane; their influence on Speech, and their apparent Relations with Diseased Nerve Structure. By BEVERLY ROBINSON, M.D., Surgeon to Manhattan Eye and Ear Hospital, etc. New York, 1875.

The Nasal Douche. What it accomplishes and what it does not. By BEVERLY ROBINSON, M.D.

Clinical Studies with Large Non-emetic Doses of Ipecacuanha. By ALFRED A. WOODHULL, M.D., Assist. Surgeon U. S. Army. Atlanta, 1875.

Cerebro-Spinal Meningitis. Report to the State Board of Health upon an Epidemic in Monroe and Lenawee Counties, Michigan; and a Study of some other facts relative to the cause of the Disease. By HENRY W. BAKER, M.D., Sec. of the Board, etc.

Experimental and Clinical Observations on the use of Nitrite of Amyl in Epilepsy. By JAMES H. MCBRIDE, M.D., Assist. Phys. to Northern Hosp. for Insane, Oshkosh, Wis. Chicago, 1875.

A Case of Reflex Neuralgia, associated with Urethral Contractions and a rare form of Urinary Signus. With a description of the Cold-water Coil. By FESSENDEN N. OTIS, M.D., Clin. Prof. of Genito-Urinary Dis., Coll. of Phys. and Surgeons, New York. New York, 1875.

Canceroid or Epithelioma of the Upper Lip; Modified Operation for its Removal; Cure. By MIDDLETON MICHEL, M.D., Prof. of Phys. and Hist. in Med. Coll. of South Carolina.

Statistics of Mortality from Pulmonary Phthisis in the United States and in Europe. Compiled from official health reports and from data obtained from Life Insurance Companies. By WM. GLEITSMANN, M.D., of Baltimore, 1875.

Laryngeal Phthisis. By R. P. LINCOLN, M.D. New York, 1874.

Report of a Case of Inversio Uteri of two years' standing, reduced by Taxis, with remarks. By B. F. DAWSON, M.D., Attending Phys. to N. Y. State Woman's Hosp., etc. New York, 1875.

Analysis of One Thousand Cases of Skin Diseases, with cases and remarks on Treatment. By L. DUNCAN BULKLEY, M.D. Louisville, 1875.

Ichthyosis of the Tongue and Vulva. By ROBERT F. WEIR, M.D. New York, 1875.

The Management of Eczema. By L. DUNCAN BULKLEY, A.M., M.D. New York: G. P. Putnam's Sons, 1875.

On Spasmodic Urethral Stricture. By F. N. OTIS, M.D., Clin. Prof. of Genito-Urinary Dis. at Coll. of Phys. and Surgeons, N. Y. New York, 1875.

The Pathology and Etiology of Pulmonary Phthisis, in Relation to its Prevention and Early Arrest. By E. DARWIN HUDSON, Jr., A.B., M.D.

Résumé of a Report on Position, Pneumatic Pressure, and Mechanical Appliance in Uterine Displacements. By HENRY FRASER CAMPBELL, M.D. Atlanta, 1875.

A Description of New Instruments for making Examinations and Applications to the Cavities of the Nose, Throat, and Ear, and some remarks about the Local and General Treatment of the Affections in which they are applicable. By THOMAS F. RUMBOLD, M.D. St. Louis.

Discourse Commemorative of the Life and Character of Alex. Hodgson Stevens, M.D., LL.D., Late Prest. of N. Y. Acad. of Med., etc. By JOHN GLOVER ADAMS, M.D. New York: Anson D. F. Randolph & Co.

Valedictory Address to the Medical Graduates of the University of Louisville, March 1, 1875. By DAVID W. YANDELL, M.D., Prof. of Surgery. Louisville, 1875.

The Model Physician; a Valedictory Address. By HENRY D. DIDAMA, M.D., Prof. of Prin. and Prac. of Med. in Syracuse Univ. Syracuse, 1875.

The Present Status of Electricity in Medicine. By WILLIAM F. HUTCHINSON, A.M., M.D. Providence, 1875.

Relation of Ophthalmology to Practical Medicine. By WILLIAM THOMSON, M.D. Philadelphia, 1875.

Proceedings of the Medical Society of Washington Territory, Oct. 1874.

Transactions of the Medical Society of the District of Columbia, April, 1875.

Annual Report of the Alumni Association of the Philadelphia College of Pharmacy. Philadelphia, 1875.

Annual Address before the Society of the Alumni of the Medical Dept. of the University of Pennsylvania. By CORNELIUS C. COMEGYS, M.D. With the Proceedings of the Alumni Meeting of 1875. Philadelphia, 1875.

History of the Association of Medical Superintendents of American Institutions for the Insane, from 1844 to 1874, inclusive. Compiled from the Records of the Association. By JOHN CURWEN, M.D., Secretary of the Association. 1875.

Proceedings of the Academy of Natural Sciences of Philadelphia, Oct., Nov., Dec. 1874.

Report of the State Board of Health of Michigan. Lansing, 1875.

Annual Report of the State Board of Health of Massachusetts, January, 1875.

Annual Report of the Board of Health of the City of Dayton, 1875. Dayton, 1875.

Annual Report of the Trustees of the Massachusetts General Hospital, 1874.

Report of the Brooklyn Eye and Ear Hospital, Jan. 1875.

Report of the New York Ophthalmic and Aural Institute, 1874.

Annual Report of the Supervising Surgeon of the Marine Hospital Service of the United States, for the fiscal year 1874. JOHN M. WOODWORTH, M.D.

Report of the Philadelphia Infirmary for the Diseases of the Ear.

The Metropolitan Throat Hospital. New York, 1875.

Report of the Cincinnati Hospital, 1874. Cincinnati, 1875.

Report of the Asylum for the Relief of Persons deprived of the use of their Reason. Philadelphia, 1875.

Nova Scotia Hospital for the Insane. Report of the Medical Superintendent. Halifax, 1875.

Report of the State Lunatic Asylum, Utica, N. Y., 1874. Albany, 1875.

The following Journals have been received in exchange:—

Deutsches Archiv für Klinische Medicin. Bd. XV., Heft. 2, 3, 4.

Archiv für Anatomie, Phys. und Wissenschaftliche Medicin. No. 6, 1874. No. 1, 1875.

Archiv der Heilkunde. Heft 3, 4, 1875.

Centralblatt für die Med. Wissenschaften. Nos. 10 to 26, 1875.

Allgemeine Wiener Medizinische Zeitung. Nos. 9 to 22, 1875.

Medizinische Jahrbücher. Heft 2, 3, 4, 1874, and 1, 1875.

Bibliothek for Læger. Sjette Række. Redigeret af Dr. J. C. Lehmann. Femte Bind. forste und andet Hæfte.

Nordiskt Medicinskt Arkiv. Sjunde Bd. Första Häftet.

Annali Universali di Medicina e Chirurgia. febbrajo, Marzo, 1875.

Giornale Italiano delle Malattie Veneree e Della Pelle. febbrajo, 1875.

L'Imparziale. Nos. 5, 6, 7, 8, 10, 1875.

Lo Sperimentale, 1874. Fascic. 1, 2, 3, 1875.

O Correio Medico de Lisboa. Nos. 13, 14, 15, 16, 19, 20, 1875.

Kin-Se-I-Setzu. No. 3, 1875.

Archives Générales de Médecine. Avril, Mai, Juin, 1875.

Revue des Sciences Médicales en France et l'Etranger, Avril, 1875.

Annales de Dermatologie et de Syphiligraphie. Nos. 3, 4, 1874-75.

Archives de Physiologie Normale et Pathologique. Mars, Avril, 1875.

Annales des Maladies de l'Oreille et du Larynx. Mars, Mai, 1875.

Gazette Hebdom. de Méd. et de Chirurgie. Nos. 10 to 23, 1875.

L'Union Médicale. Nos. 28 to 69, 1875.

Le Mouvement Médical. Nos. 11 to 22, 1875.

La Tribune Médicale. Nos. 343 to 355, 1875.

Le Progrès Médical. Nos. 6 to 20, 1875.

The British and Foreign Medico-Chirurgical Review. April, 1875.

The Lancet. April, May, June, 1875.

The Medical Times and Gazette. April, May, June, 1875.

The British Medical Journal. April, May, June, 1875.

The London Medical Record. April, May, June, 1875.

The Sanitary Record. April, May, June, 1875.

The Practitioner. April, May, June, 1875.

Edinburgh Medical Journal. March, April, May, June, 1875.

The Glasgow Medical Journal. April, 1875.

The Dublin Journal of Medical Science. January, March, April, May, 1875.

Irish Hospital Gazette. April, May, June, 1875.

The Indian Medical Gazette. March, April, May, 1875.

Medical and Surgical Review (Australian). February, 1875.

- Canada Medical and Surgical Journal. April, May, June, 1875.
 The Canada Medical Record. March, April, May, 1875.
 The Canada Lancet. April, May, 1875.
 The Obstetrical Journal of Great Britain and Ireland. With an American Supplement. April, May, June, 1875.
 The Boston Medical and Surgical Journal. April, May, June, 1875.
 The New York Medical Journal. April, May, June, 1875.
 The Medical Record. April, May, June, 1875.
 The American Journal of Insanity. April, 1875.
 The American Journal of Obstetrics. May, 1875.
 The Psychological and Medico-Legal Journal. April, 1875.
 New Remedies. April, 1875.
 Archives of Dermatology. April, 1875.
 The Buffalo Medical Journal. April, 1875.
 The Philadelphia Medical Times. April, May, June, 1875.
 The Medical and Surgical Reporter. April, May, June, 1875.
 The Cincinnati Lancet and Observer. April, May, June, 1875.
 The Cincinnati Medical News. April, May, 1875.
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 The Chicago Journal of Nervous and Mental Diseases. April, 1875.
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 The Nashville Journal of Medicine and Surgery. April, May, June, 1875.
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 The American Naturalist. April, May, June, 1875.
 The American Journal of Science and Arts. April, May, June, 1875.
 The Boston Journal of Chemistry. April, May, June, 1875.

Communications intended for publication, and books for review, should be sent *free of expense*, directed to ISAAC HAYS, M.D., Editor of the American Journal of the Medical Sciences, care of Mr. Henry C. Lea, Philadelphia. Parcels directed as above, and (carriage paid) under cover, to Mr. Charles J. Skeet, Bookseller, No. 10 King William Street, Charing Cross, London: or M. Hector Bossange, Lib. quai Voltaire, No. 11, Paris, will reach us safely and without delay.

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ART. I.—*Respiratory Percussion*. By J. M. DA COSTA, M.D., Professor of the Practice of Medicine in Jefferson Medical College, Philadelphia; Physician to the Pennsylvania Hospital.

IN making examinations of the chest I have been often struck with the difference of sound elicited on percussion when the patient is breathing quietly or in a forced manner, and have thought that this might be made a matter of valuable investigation. Having now for years paid attention to the subject, I have been gradually able to work out what I believe will add a method of physical exploration, which, if I mistake not, will tend to clear up, and by a very simple process, many obscure problems in the discrimination of pulmonary affections. For this new means of diagnosis I propose the name of *Respiratory Percussion*. The term is, I know, not wholly unobjectionable; but it is convenient and sufficiently descriptive.

Respiratory percussion will deal then with the appreciation of the changes in the percussion note developed by the person examined holding his breath in a full inspiration or a forced expiration. There is an undoubted difference found under either circumstance when compared with the sound elicited during quiet breathing. As regards inspiration, this is more readily detected than as regards expiration; and whether this be the case or not it is so much easier for the patient, that inspiratory percussion is far more generally applicable. Most of the results commented on in this paper have been, indeed, obtained by a study of the inspiration; but the expiration has not been entirely neglected, and here and there the help it affords will be alluded to.

Before, however, explaining what the results are when this method of physical exploration is applied to diseased conditions, it is necessary, that

we may have a standard for comparison, to inquire into the effect of respiratory percussion on the chest sounds in health. I subjoin a summary of a large number of observations grouped in accordance with the regions usually explored, and made on men having chests of good expansive power.

At the apices, and especially at what is described as the infraclavicular region, a full held inspiration increases the resonance, makes the sound fuller, and raises the pitch; and where, as is so common, the left side has normally a higher pitch, this disparity is preserved.

Below the apices, say from the upper border of the fourth rib downwards to where the pulmonary resonance ceases, the same holds good, but, even making allowance for the cardiac region, the resonance is relatively less increased on the left than on the right side.

Turning to the posterior part of the chest, we find, at the upper portions, in the supraspinous fossæ, and on a line towards the spine, that a long-drawn held inspiration makes the percussion sound much fuller and raises the pitch. In several observations this was noted as higher on the right side, and some difference was preserved in the inspiratory effort.

In the region between the scapulæ and in both infrascapular regions, the tone on gentle percussion is distinctly pulmonary, and the pitch moderately high. On the left side, on ordinary percussion, an admixture of a tympanitic sound with the pulmonary resonance may be detected, certainly in the infrascapular region. The pitch on the left, both in the lower scapular and infrascapular regions, is somewhat lower on the left than the right. A full held inspiration elevates the pitch generally, increases the resonance very much, but usually makes the difference between the sides less apparent.

These are the facts noted with reference to the inspiration. A held and complete expiration will greatly lessen at the apices the resonance and lower the pitch, and though the phenomena are most clearly made out at the upper part of the chest anteriorly, the same general facts will be observed on percussing at any part over the lungs while in a fixed expiration.

As regards the quality of the percussion note, it is but little changed; it remains during these arrested respiratory movements that of pulmonary resonance; perhaps there is a little less softness, and the slighter hardness corresponds to greater resistance to the percussing finger. But in the held inspiration we obtain nevertheless the idea of a greater mass of tone; in the held expiration the reverse. The conditions of pitch alluded to I found most constant. Increase in volume of percussion sound goes, it is always asserted, hand in hand with fall of pitch. Not so here; and the exception may, I conceive, be explained by the altered tension of the structures, and then the slight change in quality mentioned is more apt to be

found with heightened pitch. But whether this be the explanation or not, the fact is very appreciable.

I have already stated that the observations thus far alluded to were made on men. In women the mammary regions interfere somewhat with the readiness with which the signs may be elicited; still they are in the main the same, and so they are in children, though, of course, we cannot always easily get a child to hold its breath sufficiently long for purposes of study.

But to turn from the results obtained in health to those presented in disease. And here let us take up one by one the more common pulmonary affections. We begin with *bronchitis*. We find in this malady the percussion resonance, practically speaking, unaffected. Yet where extremely abundant secretions exist, and obscure the breath sounds, the clearness of the note may become impaired, and we are in doubt as to the state of the pulmonary textures. Respiratory percussion removes the doubt; the chest struck while in a full inspiration returns a sound exactly corresponding to the sound we should obtain in health. If, however (and here at once a point of value becomes apparent), there be an extension to the finer structures and beginning consolidation, the note does not become fuller and more resonant, and the difference between the damaged point and the surrounding parts or corresponding portions of the other side is very manifest. If, however, the lung be merely collapsed, respiratory percussion gives an almost normal sound, unless the collapse be extensive and the power of expanding the lung be lost, or inflammation beset the collapsed lobules. And, as I had not very long since an opportunity of noticing in a child, the fact of the sound becoming under observation less and less changed by the breathing effort, goes to prove that this condition of things has happened.

In *acute lobar pneumonia* the dulness on percussion remains unchanged by a full inspiration during the stage of perfect hepatization. As resolution begins, the note heard on respiratory percussion is more resonant, more pulmonary. And this change may show itself in advance even of returning crepitation. Thus, in a case of pneumonia of the middle of the right lung which I saw last winter, and in which loud râles completely masked the blowing breathing, the dulness on percussion was found to be uninfluenced by full held inspiration, excepting the slightest rise in pitch. As, however, resolution began, and before returning crepitation was marked, respiratory percussion returned distinct pulmonary resonance.

Chronic pneumonia is so closely associated in its clinical features with phthisis, that it will be more convenient to discuss some of the traits when examining into this malady. But I may mention here what I have noticed in some cases of chronic pneumonia in which I know the further progress of the affection, and am cognizant that it ended in recovery.

In one instance, in a child eight years of age, in which the lung fully,

though very gradually, cleared up, the consolidation was found at the lower part of the left lung, nine months after an attack of acute pneumonia. The dulness was decided, but did not amount to flatness. It lessened considerably on full held inspiration, proving that the lung texture was already partly pervious. I considered this a favourable element in the prognosis, and the opinion given was confirmed by the issue. And we may find—as in a case of chronic consolidation, of a year's standing, that presented itself to me in June, 1873—that while over the lower part of a lung, where there was with dulness on percussion extreme feebleness of breath-sound, though with increased fremitus, the dulness was scarcely influenced by full held inspiration, at the upper part the resonance became distinctly clearer, teaching that the process of absorption had there commenced. Again, in a patient referred to me by Dr. John S. Dickson, of Pittsburgh, in October, 1873, in whom the left lung was consolidated, respiratory percussion, while it made the difference between the two sides very manifest, showed a considerable clearing on the left. I learned from a letter kindly sent me by Dr. Dickson not long since, that the lung symptoms have disappeared. The same could unfortunately not be said of a mitral valve trouble from which the patient suffered.

While alluding to this case, I may mention a further point it suggests with reference to the mode of diagnosis under discussion. We see, at times, puzzling cases of persons who with organic valvular disease have been spitting blood, are perhaps born of consumptive families, and have suspicious physical signs at the apex of a lung, have impaired breathing, somewhat prolonged expiration, râles, slight percussion dulness. Is there or is there not tubercular disease? Very generally not. And we find the apparent dulness, due to heavy local congestion of the lung, with possibly slight tissue consolidation, wholly, or at least very largely, disappearing under full held inspiration, far more so than if with the same physical signs there had been tubercular deposition.

In cases of *pleurisy* we obtain much aid from respiratory percussion. Over the seat of plastic exudation of ordinary extent—instances of an extraordinary kind I have not had occasion to observe since engaged in this inquiry—forced inspiration diminishes the slight dulness that exists. Over the seat of a marked pleuritic effusion, actually no change takes place in the flat percussion note. At the very edge, however, percussion practised during held inspiration strikingly clears the sound, or, rather, brings out the contrast between the pulmonary resonance above and the abrupt tone of dulness. We can turn this well to account in those instances we sometimes meet with where, with dulness at the lower part of the chest, we are in doubt if the trouble be pleuritic effusion or chronic pneumonia. When, by respiratory percussion, the dulness at its uppermost limit becomes sharply defined, while it is unaltered below, it is an effusion. When the dulness changes in part or remains unchanged

without a sharp line developed on full breathing, it is consolidated lung. I found this admirably illustrated in a case I saw in May, 1874, and watched for seven months afterwards. Here ægophonic twang existed just at the edge of the effusion; the lung was slightly dull, but on respiratory percussion cleared, and the abrupt dulness proved the affection pleuritic.

Of still greater value is respiratory percussion in those instances of pleuritic effusion in which we have blowing respiration at the back of the lung, and in which the question arises whether or not pneumonia coexists. How difficult it may be to settle this question is seen by the long and cumbersome rules laid down by leading authorities, and withal the amount of diagnostic trust to be reposed in them is not so great, that it is not generally acknowledged that the rules may mislead. The test I beg to offer is the simple one already indicated, somewhat extended. At the lower part of the chest the flat note remains unchanged; so will the sound over the upper part of dulness by forced respiration be practically uninfluenced if there be pneumonic consolidation. But if the blowing respiration be simply from compression or condensation of the lung, and not from hepatisation, decided clearness takes the place of the dulness. I have now repeatedly found the value of this rule; but in no case did it stand me in better stead than in this.

A gentleman, 60 years of age, was seized with violent pleuritic pain, soon followed by an effusion on the right side. Notwithstanding the occurrence of this, it hurt him so much to be moved, that I had no good opportunity of examining the back of the chest for several days. When I did so, I found the most marked bronchial, even tubular respiration above the angle of the scapula. The voice there was ringing, and distinctly transmitted, and from the very hurried breathing and anxious face it was but too evident that my patient was extremely ill. Had a pneumonia set in to complicate the pleurisy, or had the pleural lesion masked the lung trouble from the onset? True, there was neither cough nor expectoration, nor marked râles. But all these may be absent in pneumonia. I feared much that a grave pulmonary inflammation was before me, which would seriously influence the chances of recovery. I studied the tubular breathing closely, and all I could find was that it was less high-pitched and ringing than is common in pneumonia. But percussion gave the most comforting knowledge. The sound which was very dull below and over the seat of almost suppressed breathing, was only slightly dull where the supposed hepatized lung was, and this dulness disappeared on full held inspiration. I assured my patient, who himself feared much that he had pneumonia, that no new and grave trouble had arisen, and in watching the case further saw it terminate as one of pleurisy with speedy absorption. Until the bronchial breathing disappeared—which it did in a few days—respiratory percussion always gave the same hopeful information.

While describing pleurisy, let us for completeness' sake see how some of

its rarer features are influenced by respiratory percussion. The tympanitic note obtained at times at the apex is lost by full held inspiration. Thus, in an instance recently at the Pennsylvania Hospital of large pleuritic effusion on the left side, in which the tympanitic percussion sound at the left apex decidedly contrasted with the lower pitched normal pulmonary resonance of the right, while a forced inspiration made this more resonant and slightly raised the pitch, it effaced the tympanitic character of the upper part of the left lung, rendering the sound somewhat duller, more like impaired pulmonary resonance. In doing this it hardly modified the pitch, only raised it slightly.

In those instances of pleurisy in which perforation takes place and pus is voided often for so long, respiratory percussion will help us in deciding how much the lung is bound down or otherwise implicated. Thus in a gentleman whom I saw in June, 1873, with a fistulous opening that had been discharging pus for twenty-one months, the whole of the left lung was dull on percussion, but the respiration was heard everywhere, even at the lower part of the chest. Excepting here where the physical signs of consolidation existed, the lung cleared up markedly on forced breathing, making the dullness of the inferior portion, in part intensified perhaps by a slight fluid accumulation, extremely evident.

In turning to *phthisis*—and I use the word now without attempting to distinguish the varieties particularly—we find respiratory percussion giving us much to study. Indeed, so many points arise that I shall in this paper do no more than attempt to bring forward some of those that are clearly defined. In the very early stages of tubercular deposit, when auscultation detects for us prolonged expiration just beginning, with, perhaps, some enfeeblement of the inspiration at the apex, and ordinary percussion shows but little, or a doubtful difference between the two sides, respiratory percussion may help us greatly by making the difference more marked. It seems at times, on the affected side, to develop a dullness which previously cannot be said to have existed; or at all events, if it do not give this result, it makes the resonance of the damaged lung only slightly greater, raises the pitch, too; but does not bring out these changes strikingly as it does on the healthy side. On the other hand, in more than a few instances of persons who had been losing flesh, came of a tubercular family, had want of expansion at the upper part of the chest, and in whom the diagnosis of tubercular disease seemed probable but was doubtful, I have allowed myself to be influenced by the normal results developed by respiratory percussion, and, tracing these cases up for long periods, have found that the impression made, proved correct. And with these normal results I must class the fact that percussion in full expiration, while it showed less resonance, did not exhibit that decided modification and lessening of pulmonary tone we obtain when the lung has begun to be solid.

There are some other matters connected with the beginning of tubercular disease, such as the varying changes of pitch and duration, the alteration of sound in character, approaching a tympanitic note, which I shall allude to but not dwell on; partly because it would lead me into discussions at variance with the limits I have set myself in this paper; partly because I have not fully solved some of the problems presented, and wish here rather to announce such general facts and laws as experience has abundantly proved.

When we have the deposit decided, and dulness manifest on ordinary percussion, respiratory percussion may show but little change in forced inspiration, except a slight rise in pitch, or the pulmonary resonance may be partly restored. In the former case the deposition is extensive; in the latter it is not; and we may thus have some means of gauging the amount of disease in the portion of lung over which we are examining, or, in other words, of seeing about how much of the pulmonary tissue is still capable of performing its function. Where we have both the apices decidedly affected, the physical signs by the method of exploration under discussion are not so easily made out, as comparison becomes more difficult; yet we generally find that the resonance of neither side is increased, is in truth usually decreased on full held inspiration, while the pitch is raised, and that forced expiration shows dulness and considerable resistance to the striking finger. As regards the forms of consumption, there has not, so far as I have studied the matter, been any difference discernible; indeed, as the same physical conditions may occur, so will the same physical signs. In instances of pneumonic phthisis I have often found, where the disease affected the lower lobe, the most obvious dissimilarity between the lower and upper parts of the chest; if percussed during the acts of breathing, large portions of the lung may still partially clear up. But there is nothing different in this respect from what has already been said in speaking of chronic pneumonic consolidation.

When, in a case of phthisis, we find that the dulness on percussion is no longer modified by the forced inspiration, we have a certain test of the malady having progressed. And this test may be made a very delicate one. I have recently examined a gentleman in whom the physical signs of crackling and prolonged expiration were the same as when noted eight months ago. The vesicular murmur had become feeble in inspiration; this was the only decided change. Yet he had night-sweats, was worse in several respects, and respiratory percussion alone, which showed dulness scarcely influenced, and very unlike what it was at first, really demonstrated that the lung affection had extended, and brought the physical signs into connection with the general symptoms.

Let us now turn to the stage of phthisis in which cavities have formed. Do we derive any information here from respiratory percussion? Yes, most interesting. We find the percussion note in full inspiration altering

to dulness, and this whether we have that mixture of dull and tympanitic sound encountered in percussing over cavities, or the cracked-pot sound, or the amphoric note. Some remnant of the peculiarity of the original sound may remain; but the character of the bulk of the sound is altered. It has become dull, and there is more resistance, and usually a higher pitch. Let me cite briefly a few illustrative cases, selected from many and very similar observations.

The case of a man in the Pennsylvania Hospital in January of this year, who had, immediately under the left clavicle, crackling, prolonged expiration, some dulness; in the second interspace, two inches from the left of the sternum, cracked-pot sound, bronchophony, approaching to pectoriloquy, respiratory sounds obscured by heart-sounds. Full held inspiration lessened the dulness somewhat immediately under the clavicle, and raised the pitch; its effect on the spot of the cracked-pot sound was to largely destroy it, render the sound duller, heighten the pitch.

In the case of a tubercular woman in the hospital in 1871, occupying Bed 13, there was hollow respiration under the right clavicle. Percussion showed dulness, mixed with a tympanitic sound; the note became duller, and of higher pitch on full held inspiration. On the left side anteriorly, where amphoric respiration and amphoric percussion sound were found, forced inspiration produced the most marked change to decided dulness.

A man died in the hospital in December, 1870, who, examined a few days prior to death, presented at the left apex dulness mixed with a cracked-pot sound; at the lower part of the chest the sound was simply dull. There was dulness on percussion also at the right apex. A full held inspiration seemed to develop this more decidedly, and raised the pitch. At the left apex the sound became duller, and the cracked-pot sound disappeared. The dulness at the lower part of the chest was somewhat lessened. At the autopsy there was almost uniform infiltration of tubercle of the upper lobe of the right lung anteriorly, less posteriorly; in the upper lobe of the left a cavity was detected $3\frac{1}{2}$ by 2 inches, the long axis extending obliquely downwards and somewhat backwards. The walls anteriorly and at the apex were only one-sixth of an inch in thickness. The remainder of the lung was much infiltrated, with grayish and cheesy masses.

Bed 6 was occupied in the winter of 1871 by a man who presented whispering pectoriloquy, percussion dulness mixed with cracked-pot sound, which yielded to simple dulness on forced inspiration. At the autopsy a considerable cavity was found at the upper part of the left lung.

In Bed 5 of the men's medical ward of the Pennsylvania Hospital a case terminated fatally, which, examined the day before death, had shown, besides the auscultatory phenomena of a cavity at the upper part of the right lung, a tympanitic percussion note mixed with dulness, which, on full held inspiration, became very much duller. A large cavity was found

occupying the right apex, and extending downwards posteriorly about three inches.

The law these cases illustrate I hold to be invariable where the cavity is of any size. I suppose the explanation lies in the tenser condition of the walls of the excavation produced by the forced breathing. This may be the reason why the more rigid walls of a bronchial dilatation are not thus modified, and do not show the altered percussion phenomena; and I believe that we shall find in this a means which, in doubtful instances, will decide between the two affections. I cannot quite positively say that no change ever takes place in bronchial dilatation, for the opportunities of investigating marked cases of this comparatively rare disorder have not been very many since I have been studying the subject. But I can say, that thus far I have found the rule laid down without exception. Not only is there no dulness produced on full held inspiration over the seat where the auscultatory signs of a cavity are caused by the dilated bronchus, but, as I had occasion to study in a case that presented itself last October, and was watched for some time, the mixed, dullish yet vesiculo-tympanitic percussion resonance became much clearer, and rather more tympanitic, nearly all dull admixture being lost.

We have thus far, for the most part, been examining affections in which alterations of dulness and questions of consolidation are the most prominent. We may now review some in which excessive clearness, or at least modifications produced by large amounts of air, are the striking traits; for example, pneumothorax and emphysema. In *pneumothorax* I think that respiratory percussion will tell us—a point often of a great deal of doubt, yet of much importance—whether the opening through which the lung communicates with the pleural sac is closed or not. When full inspiration does not modify the percussion note, the former state of things exists, excepting if the lung be expanding again after tapping, or the use of the aspirator. When the extreme resonance, or the tympanitic or amphoric note is essentially changed, we may, I believe, infer that the air still rushes from the lung into the artificial cavity in the pleura. I say I believe; because, though it has proved so in every instance I have thus far examined, I have not in enough compared the post-mortem results to announce the law as an invariable one. From this case under my care at the Pennsylvania Hospital in 1870, some of the points alluded to can be well learned.

A young Canadian, evidently tubercular, had, five weeks before admission, sharp pain in the right side of the chest, followed by great shortness of breath. Percussion yielded an amphoric note from the third rib down; above it was dull, with an amphoric admixture of sound. Auscultation showed metallic breathing, but neither tinkling nor splashing was discernible. Full held inspiration at the right apex rendered the percussion sound clearer and more resonant; below the third rib it dulled

it, almost destroyed its amphoric character, heightened the pitch. This observation was repeated over and over again. On opening the thorax at the autopsy, a large amount of air escaped from the right pleural cavity, which contained no fluid whatever. The lung was very much compressed and contracted, and adherent to the chest-walls by long, but thick adhesions. It showed tubercular deposits, and a few points of softening near the pleura; one of these had bursted, and the point of rupture was found in the anterior surface of the lung, just below the apex.

In *pulmonary emphysema* respiratory percussion gives most valuable information. It helps us to establish the presence of the disease; it enables us to form some idea as to its extent. And it does so in this manner: In marked emphysema the excessively clear or vesiculo-tympanic note is unchanged by percussing during the act of breathing; when the emphysema is not so great, it is slightly changed. But if emphysema be present at all, except to a trifling degree, the sound is not very much altered, and we are thus, in many a doubtful case, with asthmatic symptoms, greatly aided in deciding whether dilatation of the air-vesicles exist or not. I have notes of numerous observations proving the correctness of these statements, and I had thought of illustrating this part of the subject with them. But they are so positive, and the general law they make out is so clear, that it would seem a useless reiteration of readily ascertained facts. In truth, I look upon the evidence elicited by respiratory percussion with reference to emphysema as being one of the most serviceable contributions that has come from its study.

Thus here, as in previous sections of this paper, I have endeavoured to show how respiratory percussion may be made available alike in detecting disease and in ascertaining its limits. I have tried to make clear that it helps us often where we most need help; and though it requires care and some training to practise, it does not do so in any greater degree than that important science of which, I trust, it may form henceforth a recognized branch.

ART. II.—*A Contribution toward the Natural History of Acute Dysentery; consisting of a Report of ten Cases observed without Medicinal Treatment.* By AUSTIN FLINT, M.D., Professor of the Principles and Practice of Medicine, and of Clinical Medicine, in the Bellevue Hospital Medical College, New York.

MY object in the study of the cases of dysentery to be reported in this article, is the same which led me, nearly thirteen years ago, to observe cases of acute articular rheumatism, a report of which appeared in this

Journal.¹ I may claim for that report that it contained sufficient evidence of acute articular rheumatism being a self-limited disease, and that the duration of the disease is not much abridged by the various methods of treatment which have at different periods been in vogue.

Inasmuch as I entered on the study of the natural history of rheumatism deliberately, feeling warranted in so doing by reasons given in connection with my report, it is proper to add that my cases antedated those which, for a similar object, were treated with mint water in Guy's Hospital, London. This fact I certainly should not mention, had there been any reference to my article in either of three successive reports of cases so treated at the hospital just named. So far as I know, my reported cases were the first observed with express reference to the natural history of the disease, that is, the history as obtained by the study of cases in which no active therapeutical measures were employed.

In 1853, I published a clinical report on Dysentery based on an analysis of 49 cases.² These cases were analyzed with regard to occupation, season and year, previous health, access, symptoms referable to the different anatomical systems, duration, mode of dying, relapses, fatality, supposed causative agencies, subsequent health, recurrence of the disease, and the apparent effects of remedies. Different methods of treatment were employed in these cases. Afterwards the report was published, with supplementary remarks on the causation, pathology, and management of the disease, making a *brochure* of ninety pages. This work was never circulated, the entire edition having been destroyed by fire. With regard to fatality, I had imperfect notes of 11 cases, in addition to the 49 of which the histories were more complete; and of the whole number of cases, namely, 60, the number of deaths were 13. This rate of mortality, however, did not fairly represent the proportion of fatal cases in my experience, for I had treated a certain number of cases ending in recovery, of which I did not preserve notes, whereas I had noted all my fatal cases. The sixty cases were recorded during a period of thirteen years. All the fatal cases occurred during the last four years of this period, and a majority of the cases, namely, 48, were recorded during these four years. During the preceding nine years, the disease was extremely rare in the place where I then resided (Buffalo), and all the cases were sporadic. The greater number of cases, and the occurrence of fatal cases during the last four years, were attributable to an epidemic influence. It may be assumed that in a salubrious northern climate, sporadic dysentery rarely ends fatally after infantile life.

The duration of the disease, in the cases ending in recovery, varied from

¹ A Contribution towards the Natural History of Articular Rheumatism, consisting of a report of thirteen cases treated solely with Palliative Measures. Amer. Journ. of Medical Sciences, July, 1863.

² Buffalo Medical Journal, numbers for July, August, September, and October, 1853.

one day to twenty-one days. It was one day in a single case, and under five days in another case. It was twenty-one days in a single case, and the next longest duration was 16 days. The mean duration was $9\frac{5}{8}$ days.

There was a striking disparity, in the duration of cases ending in recovery, between hospital cases and the cases in private practice. Of 13, in this group of cases, treated in hospital, the mean duration was just 13 days; of 17 cases in private practice, the mean duration was a fraction over 7 days. With reference to this disparity, I quote from my report as follows:—

“The explanation of this difference, which suggests itself, is, that the hospital patients were generally admitted after the disease had existed for some time, frequently without having received any treatment, and sometimes perhaps having been injudiciously treated. That the condition of the hospital patients after admission was even better than that of the patients in private practice, is rendered probable by the fact that the ratio of fatality among the latter was considerably greater. Of 27 patients in private practice, 8 died; while of 22 hospital cases, in only 3 was the disease fatal. It is a curious fact that the duration of the disease should be nearly twice as great in the hospital cases, and, at the same time, the mortality less than one-half in these cases contrasted with those occurring in private practice!”

In the fatal cases the shortest duration was 6 days, and the longest 19 days. The mean duration was a fraction over 9 days. The duration in both the fatal and not fatal cases, was reckoned from the date when the diarrhœa began, and not from the first dysenteric dejection.

In no case did the disease end in a persistent chronic affection. It may be assumed that, in a salubrious climate, in a northern latitude, there is no tendency in dysentery to eventuate in a chronic affection, which is a not infrequent sequel in tropical climates. The recovery in the majority of cases was rapid as well as complete. In no instance was there a relapse. These facts were considered to denote that “the disease belongs in the category with those which involve certain processes (zymotic) within the organism, reproduced with difficulty after they are completed.” Another interesting fact pointing to this conclusion was developed by my analysis. In sixteen cases the patients had either been under my observation, or definite information was obtained respecting their subsequent health, for periods varying from one year to thirteen years, and not one of these fifteen patients had had a second attack of dysentery. Quoting from my report:—

“This result is rendered more striking by the fact that, exclusive of the case in which the date of the disease was but a year since, all the patients have been for several years past within the sphere of an epidemic influence—the disease, as already stated, having prevailed more or less as an epidemic in this city, in the autumnal months, for the last four years. I can also call to mind several cases of dysentery, occurring at least four years since, the histories of which were not taken, the patients, in the mean time, being under observation. In none of these instances has the disease been twice experienced. It would seem that an attack of dysentery does not exert an unfavourable influence on the organism; that

patients are not rendered thereby prone to any particular disease, but, on the other hand, enjoy good health. It would also seem that patients are not liable to a repetition of the disease."

These conclusions, it is to be borne in mind, relate to the disease in a salubrious, temperate climate.

With respect to etiology, I adduced, in the supplement to my report, considerations which seemed to me to constitute logical proof that the disease is due to a special or specific cause—that is, to an *infection* in the sense in which this term is used by late German writers. Simply enumerating these considerations, they are as follows: 1. The absence of obvious causes. The analysis of my cases showed that the disease was not attributable to imprudences in diet, exposure, or any other apparent causes; 2. The limitation of its prevalence to certain places and periods; 3. Its restriction to a particular season; 4. Exemption, to a certain extent, from subsequent recurrence of the disease; 5. The disease affecting in preference persons of good health and constitution. My analysis showed this last statement to be correct, although it is generally stated by writers that persons of feeble health and constitution are more likely to become affected.

The treatment in my cases varied. Laxatives, generally castor oil, were prescribed in a small number of cases. Calomel with opium was employed in twenty cases, and it was given, uncombined with opium, in three cases. Opium was employed without calomel in twenty-six cases. Astringents were given in a small proportion of cases, and, in several cases, topical applications by means of enemata were tried. The remedies used in the latter mode were the acetate of lead, tannic acid, and the nitrate of silver. The cases were analyzed with care in order to judge of the immediate effects of the different measures, together with their influence on the termination and duration of the disease.

A comparison, as regards the duration, of the cases in which calomel and opium were given, with the cases treated with opium alone, showed clearly that the calomel had no curative effect, the duration in the two groups of cases being very nearly the same. The supplementary remarks on the treatment concluded with the following paragraph:—

"To recapitulate, in a few words, some of the more important of the practical points involved in the foregoing considerations, rational principles, and what light is afforded by experimental knowledge, lead us to regard opium as by far the most valuable of the remedies employed in the management of dysentery; but to secure the full efficiency of this remedy, in this disease, it must be given in doses sufficient to fulfil the indications which it is designed to meet, adapting quantity and modes of administration to the peculiarities of individual cases, and at the same time observing due precautions in its use. Bloodletting, it is probable, is useful in some instances, but it is to be employed with discrimination, and cautiously graduated by the circumstances which indicate it. Purgatives, especially saline, are frequently important by way of preparation for the good effect

to be expected from the use of opium. Astringents, and the numerous remedies supposed to be useful in this disease, may be serviceable to a greater or less extent; but, relatively, they hold the position of auxiliary measures, and their employment should not detract from reliance on those which are more efficient. Finally, after employing means to abate the intensity of the disease, and dispose to its resolution, the chief object of the management in cases which resist these means is to sustain the vital forces with the hope of prolonging life, and developing power to carry on and complete the processes of restoration."

Dysentery is one of the diseases considered by physicians now, as hitherto, to claim therapeutic interference more or less active. The following paragraph, from the article on this disease in the *Nouveau Dictionnaire de Médecine et de Chirurgie Pratiques*, may be quoted as a correct expression of medical opinion in this regard:—

"The treatment of dysentery has undergone numerous changes in accordance with the doctrinal ideas which have been entertained respecting the nature of the disease; but, irrespective of these, physicians have been unanimous in repudiating an expectant treatment, and in proposing curative measures more or less energetic."¹

It was formerly treated pretty actively by bloodletting and other of the so-called antiphlogistic measures. Emetics have been much used, and are extolled in the article on this disease in "Ziemssen's Cyclopædia." Cathartics have been, and still are, in vogue. Mercury has only within the past few years fallen into disuse, and some practitioners still cling to it. Various astringent remedies have been considered curative. Narcotics, especially opium, have of late been relied upon by many. Ipecacuanha, in large and small doses, has been, and still is, in repute with many; and some have thought that topical treatment, by enemas, was often effective. In deciding to observe some cases without any active treatment, I was actuated by the argument that if a disease have been treated with apparent success by numerous different and opposite measures, it is fair to infer an intrinsic tendency to recovery and self-limitation. Hence, I concluded that it would be proper to study the natural history of dysentery. On the importance of obtaining knowledge of the natural history of all diseases, I need not enlarge, since it is obvious that, in order to judge of the curative influence of treatment, this knowledge is indispensable. I resolved, therefore, in 1872, to collect the histories of some cases of dysentery, in which the disease was allowed to pursue its course unaffected by any treatment. I have collected, since that date, the histories of ten cases. These have not been selected cases, as perhaps

¹ *Le traitement de la dysenterie a subi de nombreuses modifications suivant les idées doctrinales qui ont été adopté sur sa nature; mais quelles que soient les appréciations qui ont été émise, les médecins ont été unanimes pour repousser l'expectation et pour proposer des moyens curatifs plus ou moins énergique.*—Tome Onzième, 1869.

the small number might suggest. That the number is so few is thus explained: The cases admitted into hospital of this disease are not numerous. They are admitted chiefly in the months of July, August, and September. Of the number of cases admitted in my service, many were not acceptable on account of treatment having been employed prior to admission into hospital. Moreover, I accepted only cases in which patients had been attacked with the disease while in fair health, and cases in which this disease existed without any existing complication.

It may, perhaps, appear to some that ten cases are too few to furnish data adequate to determine the natural history of a disease. But to determine the intrinsic tendency of a disease to recovery, and the fact of self-limitation, a large number of cases is not requisite; and after having collected histories enough to settle these points, it might be improper to persist longer in this plan of study; for it does by no means follow, because a disease is shown to end favourably of its own accord after a certain duration, that no treatment is indicated. To render a disease abortive, to shorten its duration, to prevent complications, and to palliate symptoms, are not any the less objects for clinical study; and our knowledge of the natural history of a disease is especially useful in enabling us to prosecute clinical study with reference to these objects. To illustrate this view by reference to acute articular rheumatism: this disease has been shown to pursue, in a large proportion of cases, a favourable course, and to be self-limited. This knowledge does not conflict with the fact that a full alkaline treatment has a certain amount of influence in preventing cardiac complications, and in shortening the duration of the disease; nor does it diminish the importance of reducing excessive hyperpyrexia in some cases as a means of saving life. Believing these measures of treatment to be useful in the treatment of acute articular rheumatism, I should not feel justified in continuing to observe cases without treatment, since a sufficient number to determine the natural history of the disease has been already observed.

I proceed now to give a succinct account of the ten cases of dysentery, the histories of which I have collected.¹

CASE 1. (Dr. M. B. Early, House Physician.)—Catharine O. B., age 21, domestic, was admitted August 22, 1872. Two weeks before her admission she had had for two days diarrhoea with tormina and tenesmus, but the evacuations were not dysenteric. Five days before admission she was again seized with diarrhoea, and soon afterward the evacuations became small, frequent, and consisted chiefly of bloody mucus, accompanied with tenesmus. On the day of her admission, the dysenteric evacuations occurred every few minutes; she had no appetite; she complained of weakness; the tongue was dry and coated; the skin was warm and moist,

¹ The histories were recorded under the immediate supervision of the House Physicians (residing in the hospital) whose names are given in connection with each case; I have condensed the histories as much as practicable.

and there was tenderness over the colon, especially at the site of the sigmoid flexure. In order to secure the moral effect of medicinal treatment, the following was prescribed: Tinct. cinchonæ comp. $\mathfrak{z}$ ij, Aquæ $\mathfrak{z}$ ij. Two drachms to be given every 4 hours. This was used as the *placebo* remedy in all the cases.

23d. Pulse 132; respirations, 32; temperature (always in the axilla) $102\frac{1}{2}^{\circ}$. Frequent evacuations had continued, with tenesmus and pain. Tongue dry and coated, much thirst. Skin warm and moist. Very little sleep on account of pain. Pain in site of colon, and considerable tenderness, especially over the sigmoid flexure.

25th. Pulse 120, and temperature $99\frac{1}{2}^{\circ}$ at A. M. The dysenteric evacuations had been, and still were, frequent, with considerable tormina and tenesmus. Tongue thickly coated, and moist. Much thirst, anorexia. No vomiting nor nausea. Skin moist and warm. Passed urine freely. Tenderness over colon continued.

26th. Pulse 124, respirations 28, and temperature $100\frac{1}{2}^{\circ}$ at A. M.; dysenteric passages still frequent, with tormina and tenesmus. Some nausea, and other symptoms about the same as on the previous day. At P. M. pulse 112, respirations 24, and temperature 100° .

27th. The patient reported better. Dysenteric evacuations less frequent, with less pain, but tenesmus continued. Some nausea; tongue coated and moist, much thirst. Aspect brighter. Some appetite; milk for diet. At P. M. pulse 102, respirations 32, and temperature 100° . During the day only five passages, and they contained some fecal matter.

28th. Pulse 96, respirations 24, and temperature $100\frac{1}{2}^{\circ}$ at A. M. The evacuations not frequent, and contained fecal matter, the pain and tenesmus having much diminished. She reported much better. Tongue thickly coated and moist; thirst continued. More appetite. Tenderness over colon diminished; at P. M. pulse 92, and temperature $100\frac{3}{4}^{\circ}$.

29th. At A. M. pulse 94, and temperature $99\frac{3}{4}^{\circ}$. Patient reported better. The passages not frequent, and containing more fecal matter. More appetite. At P. M. pulse 110, and temperature $100\frac{3}{4}^{\circ}$. The passages but slightly dysenteric, and tenderness over colon slight.

30th. Pulse 100, and temperature $100\frac{1}{4}^{\circ}$ at A. M. One passage only since yesterday. Tongue slightly coated; appetite improving. At P. M. pulse 92, and temperature $99\frac{3}{4}^{\circ}$. Reported feeling quite well, and wished to sit up.

September 5. Noted that she was now quite well and was discharged.

Duration from the commencement of diarrhœa to convalescence 14 days; do. to date of discharge 19 days; duration from first dysenteric dejection to convalescence, about 12 days.

CASE 2. (Dr. M. B. Early, House Physician.)—Mary S., aged 54, widow, domestic, was admitted August 9, 1872. A week before her admission she was seized with diarrhœa, and subsequently, the dejections became dysenteric, accompanied with tormina and tenesmus. On admission the dejections were frequent, and consisted entirely of bloody mucus. The skin was cool, with clammy perspiration. Pulse 100, and temperature $101\frac{1}{2}^{\circ}$. Tenderness over colon, especially the descending portion. No appetite, much thirst. Some nausea and vomiting; complains of great weakness. The tincture of cinchona in water was prescribed, as in the preceding and in the subsequent cases.

August 10. A. M. the dysenteric passages continued to be frequent, with tormina and tenesmus. Skin moist and cool. Pulse 92, and temperature $99\frac{2}{3}^{\circ}$. Complained of weakness. Tenderness over colon continued. She had some appetite. At P. M. pulse 92, and temperature $102\frac{1}{2}^{\circ}$. Much thirst; tongue moist and slightly coated.

11th. At A. M. pulse 88, and temperature $99\frac{1}{2}^{\circ}$. Complained of weakness. Dejections contained mucus, but no blood. Much thirst; no vomiting nor nausea. Tormina and tenesmus continued. Milk for diet.

12th. At A. M. pulse 88, and temperature 99° . Had desire for food. Tongue coated. Slight tympanites. Tenderness over descending colon continued; skin cool, and perspiring. At P. M. pulse 84, and temperature 99° . The dejections were not frequent, and were fecal in character. Profuse perspiration.

13th. Pulse 86. Three passages during night, one containing some blood, the others fecal. Appetite good. Some tenesmus continued, and tenderness over descending colon.

14th. At A. M. pulse 68, and temperature $98\frac{3}{4}^{\circ}$. Passages few and fecal, with some tormina and tenesmus.

15th. Reported feeling quite well. Passages few and not dysenteric.

After this date the passages remained for some days loose, but without any dysenteric characters. It is noted, September 6, that the patient was up and about the room. She was discharged September 18.

Duration from the commencement of diarrhœa to convalescence 13 days. Duration to date of discharge 34 days. Duration from the first dysenteric dejection to convalescence about 10 days. The reason for her remaining so long in hospital is not noted, but, as is well known, in a pauper institution patients are often allowed to remain on the score of humanity for an indefinite period after convalescence and recovery.

CASE 3. (Dr. Lemuel B. Bangs, House Physician.)—Edward R., aged 36, was admitted July 8, 1873. Diarrhœa began on July 6. It followed a debauch. On his admission the dejections were very frequent, small, consisting of blood and mucus, and attended with tormina and tenesmus. The pulse was 108, respirations 21, and temperature 103° .

9th. At A. M. pulse 96, respiration 18, and temperature $100\frac{1}{4}^{\circ}$. At P. M. pulse 76, respiration 16, and temperature $99\frac{1}{2}^{\circ}$. During this day there were five dysenteric passages, with tormina and tenesmus.

10th. At A. M. pulse 80, respirations 18, and temperature $98\frac{1}{2}^{\circ}$. One passage only during the night, which was fecal in character. At P. M. pulse 72, respirations 23, and temperature 99° .

11th. At A. M. pulse 68, respirations 16, and temperature $98\frac{1}{2}^{\circ}$. Patient reported much better. Three passages during the night, containing mucus but no blood. At P. M. pulse 78, respirations 18, and temperature 98° .

12th. At A. M. pulse 84, respiration 16, and temperature $98\frac{1}{2}^{\circ}$. During the night two dysenteric passages, with some tenesmus. He had some appetite. Milk diet. At P. M. pulse 72, respirations 24, and temperature $98\frac{1}{2}^{\circ}$.

13th. At A. M. pulse 72, respirations 20, and temperature $98\frac{1}{4}^{\circ}$. Had had three passages since yesterday morning.

14th. No passage since yesterday. The patient reported quite well, and was discharged on this date.

Duration from commencement of diarrhœa to convalescence and discharge 8 days. Duration from first dysenteric dejection to convalescence 7 days.

CASE 4. (Dr. Joseph C. Young, Jr., House Physician.)—Emma S., aged 20, domestic, was admitted July 28, 1874. She was in the habit of taking opium, the daily quantity taken being from one to three ounces of the U. S. officinal solution of morphia. Her disease began five days before admission. On her admission she had frequent passages of blood and mucus, with tormina and marked tenesmus. She was deprived of opium, and the bromide of potassium with chloral was given to allay the nervous disturbance caused by the interruption of her habit. The tincture of cinchona mixture was given as in the preceding and subsequent cases.

29th. The dysenteric passages had been frequent.

30th. The dysenteric passages were less frequent.

Aug. 1. The dysenteric passages had ceased, and she was distinctly convalescent.

5th. Noted that she continued free from the disease.

Duration from the commencement of the diarrhœa to convalescence 9 days. The date of the first dysenteric dejection, and, also, the date of the discharge from hospital, were not noted. By mistake, in this case, one grain of opium was given once in a suppository to relieve tenesmus.

CASE 5. (Dr. Joseph C. Young, Jr., House Physician.)—Theodore Y., aged 45, was admitted July 25, 1874. Three days before his admission diarrhœa began, and, at the time of his admission, he had frequent passages consisting of blood and mucus, with tormina and tenesmus.

26th. He had had eleven dysenteric passages in the twenty-four hours.

27th. During the last twenty-four hours, seven passages, the last fecal, and but slightly tinged with blood.

28th. Two passages fecal in character. He was discharged on this date.

Duration from the commencement of diarrhœa to convalescence and discharge 6 days. The date of the first dysenteric dejection in this case is not noted.

CASE 6. (Dr. Frederick W. Chapin, House Physician.)—Peter G., aged 40, was admitted September 1, 1874. Three days before admission, after a debauch, diarrhœa began. The passages became dysenteric on the day of his admission. They were now frequent, and accompanied with tormina and tenesmus. There was but little constitutional disturbance, the pulse and temperature being about normal. Tongue somewhat glazed. Anorexia and much thirst.

2d. Had had sixteen passages since the previous day; the last contained fecal matter in considerable quantity, the others wholly dysenteric in character.

5th. The dysenteric passages had ceased, and the patient was discharged.

Duration from the commencement of diarrhœa to date of convalescence and discharge 8 days. Duration from the first dysenteric dejection 5 days.

CASE 7. (Dr. Robert A. Murray, House Physician.)—Maggie M., aged 37, was admitted August 22, 1874. Diarrhœa began four days before

her admission. Two days before her admission the passages became dysenteric. She vomited frequently from the date of her illness up to the time of admission. On her admission, the passages were frequent, consisting of sanguinolent serum and mucus, without any fecal matter, and accompanied with tormina and tenesmus. No febrile movement (temperature and pulse not noted). Much thirst. Complained of weakness.

23d. Eight passages during the preceding twenty-four hours, of the same character as previously. Much pain and tenderness, but less tenesmus than on the day previous. No febrile movement.

24th. Six or seven passages in the preceding twenty-four hours. Pain, tenderness, and tenesmus diminished.

25th. Less pain and tenesmus. Dejections less sanguinolent, and contained some fecal matter. Reported stronger. Asked for solid food, the diet hitherto having been milk. Some solid animal food was allowed.

26th. The passages were mostly fecal, containing a little blood. Tormina, tenderness, and tenesmus slight. She was allowed to sit up for a short time on this date.

27th. Two passages in the night, with some blood and tenesmus; none on this date. Sat up the entire day, and ate the ward diet.

28th. Two natural passages in night, and none on this date.

30th. Several loose passages on this date, but no blood nor mucus; some tenesmus and slight tormina.

Sept. 1. Up and about the ward. Passages were normal.

3d. Discharged well.

Duration from commencement of diarrhœa to convalescence 10 days; do. to discharge 17 days; duration from date of the first dysenteric dejection to convalescence 8 days.

CASE 8. (Dr. Robert A. Murray, House Physician.)—Johanna L., aged 49, was admitted August 15, 1874. Diarrhœa began two weeks before her admission. The dejections were frequent and watery, but without tenesmus, up to the day before her admission, when they became dysenteric. Although she had lost appetite and felt quite weak, she kept about until the day before her admission. On her admission she had a sallow complexion; the surface was cool and dry; the pulse was 80, respirations 20, and temperature 98°; tongue slightly furred; some thirst; anorexia. The passages consisted of mucus and sero-sanguinolent liquid, accompanied with some tenesmus and tormina.

16th. Passages during the night very frequent, so that she desired the bed-pan under her constantly, and they continued to be frequent during the day, accompanied with tormina and tenesmus.

17th. Reported better. Had some appetite. The passages were less frequent, and were accompanied with less pain and tenesmus.

18th. The patient was much better. The pain was much less, and no tenesmus. The passages were still numerous, consisting of sero-sanguinolent liquid, with but little mucus and some fecal matter. Tongue clean. No febrile movement.

19th. No material change. The patient desired salted codfish for diet, which was allowed.

20th. Marked improvement in general condition and in the dejections.

21st. The passages consisted of fecal matter alone. No tenesmus.

22d. Progressive improvement. The passages were feculent but loose.

23d. The patient was much frightened by an unruly inmate of the

ward, and this was followed by severe tormina and numerous loose passages, but without blood, and with very little mucus.

24th. Patient reported quite comfortable. Had had two passages only, and these were natural. She was now taking solid animal food.

27th. No return of dysenteric passages.

Sept. 2. Progressive improvement, and the passages natural.

13th. Discharged well.

Diarrhœa preceded the characteristic dejections of dysentery in this case for nearly two weeks. Dating from the latter, the duration to convalescence was 7 days; do. to date of discharge 31 days.

CASE 9. (Dr. F. W. Chapin, House Physician.)—Terence D., aged 35, was admitted October 20, 1874. Diarrhœa began seven days before the date of his admission, and on the second or third day afterward the dejections became dysenteric. On his admission, as previously, they were very frequent, small, consisting of bloody mucus, and accompanied with tenesmus. The axillary temperature was $100\frac{1}{2}^{\circ}$.

21st. On the evening of the 20th, the patient had an epileptiform convulsion, and he stated afterward that he had had five similar attacks during the preceding five years, and that they had followed excessive drinking. On this day at A. M. the temperature was 101° , and at P. M. 100° . The dysenteric passages continued to be frequent, with tormina and tenesmus.

22d. The dysenteric passages were less frequent, the pain and tenesmus being less marked. Temperature at A. M. $99\frac{3}{4}^{\circ}$, and at P. M. $100\frac{1}{4}^{\circ}$.

23d. Dejections much less frequent, containing mucus, but no blood; no tormina, and only slight tenesmus. He reported much better. Temperature at A. M. $98\frac{3}{4}^{\circ}$, and at P. M. 100° .

24th. A few dejections, which were not dysenteric.

25th. The patient reported very comfortable, and had a fair appetite.

26th. One dejection only, and natural.

27th. Patient up all day.

29th. Progressive improvement.

Nov. 1. Discharged well.

Duration from the date of the commencement of diarrhœa to convalescence 11 days; do. to date of discharge 17 days. Duration from the first dysenteric dejections to convalescence 8 or 9 days.

CASE 10. (Dr. F. W. Chapin, House Physician.)—Albert C., aged 50, was admitted November 7, 1874. Diarrhœa began six days before the date of his admission, and dysenteric dejections had existed for two days. The dejections were very frequent, consisting of bloody mucus, and accompanied with tenesmus, but without tormina.

11th. No notes were made on the three intervening days. On this date noted that the passages contained mucus, but no blood, and the tenesmus was diminished.

14th. Noted that there had been eight or nine dejections daily, but without blood, and, since yesterday, without mucus. No tenesmus.

20th. Noted that the dejections had had, since the last record, the characters of a simple feculent diarrhœa, several occurring daily. The patient now reported quite comfortable.

25th. Three or four loose passages daily, not dysenteric.

Dec. 1. Diarrhœa had ceased, and he was convalescing rapidly.
10th. Discharged well.

The duration from the date of the commencement of diarrhœa to date of convalescence 12 days; do. to date of discharge 39 days. Duration from the first dysenteric dejection to convalescence 8 days.

The foregoing ten cases are all which I have observed with reference to the study of the natural history of the disease.

The disease in no instance ended fatally. The duration, dating from the beginning of diarrhœa to the time when convalescence was declared, varied from 6 to 21 days. In one case only was the duration 21 days, and in this case diarrhœa had existed for 14 days before the occurrence of the first dysenteric dejection, the duration, in this case, after the latter dejection had occurred, being 7 days; throwing out this case, the next longest duration was 14 days. The shortest duration was 6 days. The mean duration of all the other cases is $11\frac{1}{5}$ days. The mean duration of nine cases, excluding the case in which diarrhœa preceded the dysenteric evacuations for fourteen days, is $10\frac{1}{3}$ days.

These results of the analyses serve, so far as inferences from the small number of cases are warrantable, 1st, to corroborate the conclusion drawn from the study of cases in which treatment more or less active had been employed, in respect of fatality, namely, that sporadic dysentery, in a temperate climate, tends intrinsically to recovery; 2d, to show that this disease has a self-limited duration. The number of cases analyzed, few as they are, perhaps suffice to establish these two important points in the natural history of the disease.

With reference to the inquiry in how far treatment may affect the duration, it is of interest to compare the foregoing results of the analysis with those of my analysis of 49 cases in 1853. The mean duration in thirty of the latter cases, ending in recovery, as already stated (*vide* page 28), was $9\frac{2}{5}$ days; this is a little less than the mean duration of the cases now analyzed. The difference is small, and it may be inferred from the comparison that in the 30 cases analyzed in 1853, the treatment had very little, if any, effect in abridging the duration of the disease.

The 10 cases now analyzed were all hospital cases, and, perhaps, the comparison were fairer if limited to the hospital cases among those formerly analyzed. Of the 30 cases, 13 were in hospital practice. The mean duration in these 13 cases, as already stated, was just 13 days, which is somewhat longer than the mean duration in the cases now analyzed. If we were to draw an inference from this latter comparison, in respect of the effect of treatment, it would be that the duration was thereby somewhat lengthened. This would probably be a strained inference, and I shall content myself with the conclusion that the duration, in the cases formerly, as well as those now, analyzed, was determined by the self-limitation of the disease.

The duration in 9 of the 10 cases, from the date of the beginning of diarrhœa to the date of the discharge from the hospital, varied from 6 to 39 days, the mean duration being $19\frac{5}{8}$ days. The stay of patients in hospital after convalescence does not necessarily denote unusual tardiness in recuperation, whereas a speedy discharge is generally evidence of rapidity in the restoration of health. The duration to the date of discharge, in these cases, is chiefly of interest with regard to the latter point. In 3 of the cases, the date of discharge was the same as the date of the convalescence; these patients were considered as, at once, in a condition to leave the hospital. But, comparing the mean duration, in all the cases, to convalescence, with the mean duration to the date of discharge, the latter exceeds the former by only a fraction over 8 days. The analysis, therefore, in this respect, sustains a conclusion drawn from my former analytical study of this disease, namely, that convalescence is usually rapid.

In no case was there a relapse after convalescence during the stay in hospital. In some instances a feculent diarrhœa followed the dysenteric dejections, but the latter, having once ceased, did not recur in any case. It should be noted in this connection, that the patients were allowed to take such solid food as they desired, as soon as they had a desire for it, the previous diet consisting chiefly of milk. The diarrhœa following the dysenteric dejections may have been due to indigestion, and, if so, the presence of undigested aliment in the large intestine did not reproduce the dysentery. The analysis in this point of view sustains a conclusion drawn from my former analysis, namely, the disease is not one which tends to relapse, resembling in this respect typhus and typhoid fever, pneumonia, etc. This fact is to be added to the self-limited duration, and other facts proving the specific character of the affection.

In no case did a chronic follow the acute affection, as is not infrequently observed in tropical climates. As regards a result of my former analysis, to which reference has already been made, namely, the diminished susceptibility to the cause or causes of dysentery after the disease has been once experienced, this group of cases furnishes no facts of importance. Nothing is known of the patients after their discharge, excepting in one case; Peter G., case number 6, was lately in hospital with alcoholism, and he stated that he had not had dysentery since he left the hospital. It may be mentioned that the previous history in all the cases (which I did not introduce in my abstracts) was more or less full, and in no instance had the patient previously had dysentery.

The duration from the first dysenteric dejection to the date of convalescence was noted in 8 cases. The longest duration was 12 days, the shortest 5 days, and the mean duration was $8\frac{1}{2}$ days. Comparing the latter with the mean duration from the beginning of diarrhœa to convalescence in all the cases ($11\frac{1}{8}$ days), the difference, a fraction over 3 days, shows the mean duration of the diarrhœa preceding the dysenteric characteristics.

In the 10 cases now studied, as in the 49 cases previously analyzed, the disease finished its course without any important complication or secondary affection. In none of the cases which I have collected was the disease associated with articular rheumatism or paraplegia, affections to which dysentery has been supposed sometimes to give rise.

To recapitulate the practical conclusions drawn from the study of ten hospital cases of sporadic dysentery, with reference to the natural history of the disease—

1st. The disease in a temperate latitude tends, without treatment, to recovery.

2d. It is a self-limited disease, and its duration is but little, if at all, abridged by methods of treatment now and heretofore in vogue.

3d. Convalescence is as rapid when active measures of treatment have not been employed, as in cases actively treated.

4th. Relapses do not occur in the cases in which the disease has been allowed to pursue its own course without active treatment.

5th. Sporadic dysentery, in a temperate climate, does not eventuate in a chronic form of the disease; in other words, it does not lead to ulceration or other lesions of the mucous membrane of the large intestine, and it does not involve any tendency to complications or secondary affections.

ART. III.—*Supra-pubic Lithotomy. An Attempt to ascertain its Merits and Practicability as a General Method; founded upon an Analysis of 478 Cases.* By CHARLES WINSLOW DULLES, M.D., one of the Resident Physicians at the Philadelphia Hospital.¹

SUPRA-PUBIC LITHOTOMY, or “The High Operation,” is assigned a very low place in most works upon Surgery, and is now so rarely practised that there are comparatively few medical men who have ever seen it done; indeed, it has surprised me, in my investigations, to find how little is known of it by men of no inconsiderable eminence in the profession.

¹ This paper is an abstract of a thesis, presented to the Medical Department of the University of Pennsylvania for the degree of Doctor of Medicine, which gained the Alumni Prize of \$100. The whole comprises, beside what is found here, a history of the operation from its earliest use until the beginning of 1875, with a table of 478 cases, similar to that of the American operations which is now published.

The author desires to state that he is still engaged in the investigation of the subject, and intends to publish the entire results of his labours at a later day. Any information upon this method of lithotomy will be very gladly received and duly acknowledged.

And yet it is a subject worthy of very careful consideration, since the method seems so natural and simple—as indeed it is ; and one may reasonably expect that it shall be judged by well-ascertained facts, and its value estimated by that due appreciation of its theoretical merits and practical results, whose combination alone can lead to a just decision in this, as in every other case.

Statistics alone cannot furnish the means of an accurate judgment, for there are many circumstances, affecting very materially the issues of any method, which can by no possibility be given a place in a table. Yet they do furnish the most convenient data upon which to found an opinion which will approach correctness in proportion as these theoretical considerations receive their due appreciation.

It would be impossible in this place to state all the circumstances connected with the operations collated by the author which have modified their results, nor can he expect that every reader will be disposed to attach as much importance to them, at his mention, as those who have read the full and graphic descriptions of the writers of the last three centuries. For the present it must suffice to mention some of the circumstances which have conduced to the current estimation of the value of this method, which every one of its few thorough investigators has been constrained to consider ill-founded. These circumstances being stated, we shall examine the actual results of the method as gathered from its statistics, bringing to this a proper appreciation of the preceding remarks ; and, finally, we shall compare supra-pubic with perineal lithotomy in an abstract way, in the light of these two divisions of our study.

In the first place, a large majority of the operations by this mode occurred at a period when surgery in all its branches was but imperfectly developed ; at a time when bleeding and purging were carried to extremes which later science condemns as eminently injurious ; when anæsthetics were unknown ; and when there were few of the modern facilities for the care of patients who have been subjected to so grave surgical injuries.

Again, the special methods used have often been in themselves harmful. Cheselden abandoned the operation, and records that it fell into disuse, because in a number of cases the bladders of patients were burst in attempting to distend them with what was deemed an indispensable quantity of fluid, and in others the peritoneum was cut and the intestines protruded at the wound,¹ alarming the operators and hindering them, while subjecting the patients to danger as great as it was unnecessary.

Some surgeons placed ligatures upon the penis to cause distension of the bladder by an accumulation of its contents, irritating the whole system of the patients and preparing a supply of diseased and poisonous

¹ Wm. Cheselden, "The Anatomy of the Human Body," 8vo., London, 1740, 5th ed.

urine to go pouring over the freshly cut vessels in the wound. Others placed large and rudely constructed catheters in sensitive urethrae and left them there until, in some cases, the patients could endure their presence no longer, and were provoked to intractability and violence which caused their death.

Còsme¹ and Souberbielle,² who contribute nearly one-half of all recorded cases, made use of the perineal incision. Although it is specially mentioned in few of their cases, there can be little doubt that it was used in almost all. By this means tissues were incised which it is the special merit of the supra-pubic operation, when properly conducted, to avoid, and thus were added to the dangers already existing, many of those connected with perineal lithotomy.

Beside these, the supra-pubic operation has been, by all surgeons except Souberbielle, reserved as a "dernier ressort" for extreme cases, and such as were amenable to no other method. Even Souberbielle, its most earnest advocate in this century, used the lateral operation for very young patients, because they were so uncontrollable during the operation, which in his time was of course conducted without the use of anæsthetics. Others never resorted to this method except in very old cases, or those with strictured urethrae, or in cases of enormous calculi. In regard to these last it must be constantly borne in mind that they imply not simply the greater difficulty and danger of their extraction, but, also, what is of much more consequence, the constitutional disorders which affect those who have been long calculous. The importance of these considerations is recognized by almost all recent writers upon lithotomy, and the unfairness of comparing the death rates alone acknowledged.

As to the size and weight of some calculi removed by operation above the pubes, it is seen that Vitellius extracted one weighing 3xxij;³ Còsme, one of 3xxiv 3ij;⁴ Degnise, one of 3xxxj;⁵ and Uytterhoeven, one weighing over two pounds.⁶ It is not surprising that these patients died. And yet, on the other hand, calculi just as large have been removed with success. Graefe relieved a patient of a calculus of 3xxjss;⁷ and Krimer one whose calculus weighed 3xxiij;⁸ this, too, after the perineal operation had been ineffectually practised the day before.

¹ J. Baseilhac, "Nouvelle méthode d'extraire la pierre par-dessus le pubis," 1 vol. 12mo., Paris, 1779.

² Mémoires de l'Académie, tome viii.

³ Hildanus "Opera Omnia," Frankofurti ad Mænum, MDCXLVI, Cent iv. Obs. li.; also, Henry Earle, "Med. and Chirurg. Trans.," London, March 28, 1820, vol. xi. p. 69.

⁴ Belmas, "Traité de la Cystotome sus-pubienne," 1 vol. 8vo., Paris, 1827, p. 147.

⁵ Journal Gén. de Méd. An., vii. p. 423.

⁶ Erichsen's Surgery, vol. ii. p. 705.

⁷ Journal Gén. de Méd., tome lxxx. p. 246.

⁸ Journ. von Graefe und Walther, Bd. x., 1827, p. 578.

This last complication is so grave that one must wonder that its occurrence could be followed by recovery. In a number of cases it has undoubtedly caused the death of the patient. Of those cited above, Côme had vainly attempted the lateral operation two days before he did the supra-pubic; and Deguise, failing similarly, proceeded immediately to do the second operation, and *pried* the calculus out of his patient's bladder. In the case of Dr. Hodge, found in the table of American operations, it was only after the failure of protracted attempts that the supra-pubic operation was resorted to. Any one who has been a witness to the violent efforts a surgeon will use before relinquishing the hope of extracting a calculus by the method he adopts from choice and experience, need not be urged to appreciate how far such efforts should be held responsible for the death of a patient, and how little ought in fairness to be attributed to any other method which may be used subsequently.

Still, of 19 cases that we have collected, where this occurred, it will be seen that as many as 7 recovered. It was the observing and reflecting upon this which led so eminent a surgeon as Souberbielle to become the champion of the operation all his life long. For he thought a method which could succeed with so great obstacles to success, could not be in itself very perilous.

Finally, and by no means least important, is the consideration of the manner in which the supra-pubic operation has been neglected, in teaching and in practice. It has at no time been adopted as a method of general utility. Cheselden, its most successful advocate in England, abandoned it very soon; not because it had failed in his hands, for of ten patients operated upon thus, he lost only one, and that from causes absolutely unconnected with the operation,¹ but because other surgeons had managed it so unskillfully as to kill their patients. And it has seemed to us, in examining this subject, that had Cheselden directed to the perfection of this method, which was truly scientific in its design and accomplishment, those talents which were so prolific of good results in the use of a method which owed its birth to a charlatan, the former would have been adopted even more readily than was the latter, and the whole course of lithotomy would have been very different. For at that time the ordinary methods were so very unsuccessful that all surgeons were prepared to try any which gave reasonable hope of better results. It seems to have been very unfortunate for supra-pubic lithotomy, that those accidents to which Cheselden refers, in explaining why he left it, should have occurred. Yet this surgeon, who did more than any other for the perfecting and establishing of lateral lithotomy, himself anticipated a time when the other might be practised with better chance of success. Notwithstanding

¹ Wm. Cheselden, "A Treatise on the High Operation for the Stone." 1 vol. 8vo. London, 1723.

which, the whole world turned at once to the new way, and incited by Cheselden's success, brought skill, and care, and emulation to bear upon its use, till it has attained a rank above all other methods.

Far different has been the lot of the supra-pubic operation. Instead of receiving, as did its more fortunate rivals, the careful attention of generations of eminent surgeons, it has been treated with a disdain which must surprise any one who examines carefully the literature of this subject. For a glance over many works upon surgery would lead one to imagine it to be unworthy of serious consideration; and the part of wisdom to follow the lead of those who, instead of trying on it the effect of modern skill, and care, and intelligence, have been content to estimate and reject it from the imperfect statistics of the earliest times. We shall see elsewhere that those dangers which have been held up as constituting the most serious objections to its adoption have been very much exaggerated, and in this condition repeated from author to author almost without question.

As examples of the way in which the subject has been treated, and the summary way in which it has been dismissed, we cannot refrain from quoting a few authors.

Hildanus puts it pithily: "Cum dicto igitur Dn. Franco, fideli atque industrio enivis chirurgo periculosæ hujus lithotomiæ administrationem iterum atque iterum dissuadeo." Upon which Cheselden makes this comment, "If he had seen the book (of Rossetus) he so freely criticizes, he would have found every one of his own objections there fairly stated and fully answered."

Dr. John Shaw, of Albany, in an article in the *Journal of Foreign Medicine*, Philadelphia, April, 1823, permits himself to make this ill-advised assertion: "We may sum up by saying that *all the accidents* which are generally assigned as the reason why patients die after the lateral operation, are *more apt* to take place after the high operation."

In Cooper's *Surgical Dictionary* (Am. ed. 1834), the statement is made that division of the peritonæum and protrusion of the viscera are "accidents which will be found, by any body who chooses to look over the cases on record, not to have been infrequent." A reference to the statistics we have gathered shows, that in 478 cases, only 13 times did this occur, and in only 3 did death follow. Still more, in only one of the fatal cases are we unable to find a sufficient explanation of the result without needing to charge it at all to the cutting of the peritonæum. So that it would appear that in only 1 case of 478 can we fairly charge the accident with causing the death of the patient.

Lizars, in his *Surgery* (1839), says: "Sir A. Cooper gives so horrible a picture of an operator in Paris wounding the peritonæum, and the intestines protruding, as to dissuade any one from adopting this operation." Had Lizars read some of the accounts of operations by the Apparatus

Magnus and the lateral method which occurred about his time, which were unspeakably more horrible than the one he refers to, he must have been very loath to operate for stone by any way. The account of a lateral operation,¹ by Sir Astley Cooper, which he gives in his *Surgery* (*q. v.*) would be a sufficient comment upon this remark of Lizars.

It is singular that so eminent and so well-informed a surgeon as he who collated the statistics which have furnished the bases for almost all comparisons in recent works on surgery in the English language, should have indicated an unconscious bias in this remark: "Maunde is said to have lost only 5 patients in 40 operations, and of 100 patients operated on by Frère Côme, no more than 19 are reported to have died. These results are so favourable that I have been unwilling to admit them into the general estimate."²

The cases he calls Maunde's are not found in our tables, for we think there can be little doubt that the forty cases alluded to were those to which reference is made by Carpue in speaking of Berrier;³ and have included no cases—*favourable or unfavourable*—of which there has appeared so little evidence. Côme's, on the contrary, we have put in—that is, those given in his own book—as well as two more, of which there can be little doubt—because we find him precise above the habit of his time, and no less to be credited than any more recent author. There is sufficient evidence with regard to these cases to place them quite beyond question.⁴

As late as 1868, Mr. Holmes Coote, in a lecture upon "Lithotomy and Lithotritry," says, "I have not in these remarks adverted to the high operation. *In many cases it is impossible of performance*, and in none offers advantages such as I should have ever liked to avail myself of."⁵

Yet we have found, in the cases collected, only three in which the calculus was not removed. Mr. Coote is the only surgeon, so far as we know, who ever said the operation was "impossible of performance." The facts of the case do not seem to support such a statement at all.

These expressions are not solitary instances; although, to give force to what was stated before citing them, we have quoted the most striking that have been met. The ordinary dealing with this method in teaching has been such as to dissuade almost all surgeons from hazarding their reputations by trying what their superiors neither practised nor taught. Precedent, authority, and education have combined to prevent any adoption

¹ Sir Astley Cooper, "Principles and Practice of Surgery," 8vo., London, 1836, p. 383.

² G. M. Humphry, "Trans. of Provincial Med. and Surg. Association," vol. xvii., London, 1850, p. 103.

³ J. C. Carpue, "A History of the High Operation for the Stone," 1 vol. 8vo., London, 1819, p. 121.

⁴ G. B. Günther, "Der Hohe Steinschnitt," 8vo., Leipzig, 1851, p. 69.

⁵ St. Bartholomew's Hospital Reports, vol. iv., 1868, p. 137.

of the supra-pubic operation sufficiently general to permit its merits to be fairly judged. Under these circumstances no comparison based upon statistical results alone can be justly made. The study of the whole subject is surrounded with difficulties which few have penetrated, and probably few ever will care to penetrate. Still those few invariably have, and these we cannot but believe will, come to conclusions of its merits much more favourable than can be expected of those who get all their information at second hand.

With these considerations in view, let us endeavour, as far as may be practicable, to compare the analyses of the statistics with those of other methods, and then proceed to examine the theoretical aspect of the subject.

Statistical Comparison.—The following figures in regard to the lateral operation are taken, with the exception of two tables (tables D and E), from the statistics of Keith in 1869,¹ as being sufficiently representative for this purpose.

TABLE A.²—*Showing the Age of Subjects of each Operation.*

LATERAL OPERATION.				SUPRA-PUBIC OPERATION.		
Age.	No. of cases.	Assumed Age of each.	Total.	No. of cases.	Assumed Age of each.	Total.
Under 21 . . .	1397	10	13,970	133	10	1330
21-40 . . .	301	30	9,030	55	30	1650
40-60 . . .	415	50	20,750	62	50	3100
Over 60 . . .	365	70	25,550	114	70	7980
	2478		69,300	364		14,060
Average age 28 years.				Average age 39 years.		

To show how much more advanced have been the ages at which the supra-pubic operation has been practised than those of the other method, we have taken all Keith's cases under 21 years as if they had been the mean between 1 and 20, that is, 10 years old; those between 21 and 40 I consider as 30; those between 41 and 60 I consider as 50; and those over 60 as 70. We have done the same in the cases in which the age is recorded in my own statistics, and the propriety of doing this is confirmed by the result; for the general average thus obtained varies only a fraction from that which is deduced from the sum of all the ages actually computed.

Thus we see that the average age in supra-pubic lithotomy has been more than a third greater than that of the perineal operation.

¹ Wm. Keith, "British Medical Journal," March 20, 1869, p. 253.

² The variation in the number of cases quoted in different tables is due to the accounts sometimes making no mention of certain phases, which in others are fully described.

TABLE B.—*Showing Results at Similar Periods of Life.*

LATERAL OPERATION.					SUPRA-PUBIC OPERATION.			
Age.	No. of cases.	Recovered	Died.	Ratio of deaths.	No. of cases.	Recovered.	Died.	Ratio of deaths.
Under 21 .	1397	1274	123	1 : 11.35	133	105	28	1 : 4.75
21-40 .	301	256	45	1 : 6.68	55	34	21	1 : 2.62
41-60 .	415	322	93	1 : 4.46	62	47	15	1 : 4.13
Over 60 .	365	248	117	1 : 3.11	114	75	39	1 : 2.92
	2478	2100	378	1 : 5.55	364	261	103	1 : 3.53

TABLE C.—*Showing Weight of Calculi in each Operation.*

	Recoveries.	Deaths.	In all cases.
Average weight in lateral operation	35 .02	316.03	37.25
“ “ supra-pubic “	325.44	344.50	332.00

This table shows that, in estimating the results of the supra-pubic operation, and comparing them with others, it must always be remembered they have been modified very greatly by the size and weight of the calculi, for whose removal it has been reserved. In the comparison made above, we find that of those cases which recovered from the supra-pubic operation, the calculi were more than five times as heavy as in the cases recovering after lateral lithotomy, of those dying the former exceeded the latter two and three quarters times; and of all cases the average in supra-pubic lithotomy has been four and a half times as heavy as that of the lateral operation.

TABLE D.—*Showing Mortality with Calculi of Same Weights.*

LATERAL OPERATION.					SUPRA-PUBIC OPERATION.			
Weight.	Recovered.	Died.	Total.	Death ratio.	Recovered.	Died.	Total.	Death ratio.
Under 3j .	482	47	529	1 : 11.25	11	3	14	1 : 4.66
3j-ij	101	18	119	1 : 6.61	17	4	21	1 : 5.25
ij-iiij	19	16	35	1 : 2.18	10	4	14	1 : 3.50
iiij-iv	4	7	11	1 : 1.57	13	6	19	1 : 3.16
iv-v	2	3	5	1 : 1.66	9	7	16	1 : 2.28
v-vj	2	—	2	0 : 2.00	7	4	11	1 : 2.75
vj-vij	—	2	2	1 : 1.00	1	1	2	1 : 2.00

The figures of the lateral operation in this table are taken from the Prize Essay of Crosse,¹ which is considered remarkably accurate.

In examining these death ratios, we find that, as soon as the weight of 3j is passed, the results are very decidedly in favour of the supra-pubic operation. Of those between 3j and 3ij there is little difference, while

¹ John Green Crosse, "A Treatise on the Formation, Constituents, and Extraction of the Urinary Calculus," 1 vol. 4to., London, 1835, p. 163.

below 3j the results of the lateral operation are much better than those of the other. It is proper to observe in regard to these small calculi, that the supra-pubic operation has been used for such in only 14 cases, while the lateral has been used in 529. This, in itself, is, we think, to be considered as unfavourable to a very good exhibit, and to be given some weight in the comparison. Beside this, the small calculi were removed in most cases from little children, to whom the supra-pubic operation was formerly very dangerous, because they struggled so violently against it. Since the introduction of anæsthetics, such a consideration would lose its force; but, as we find, the great majority of the recorded cases were done before they were used at all.

TABLE E.—*Showing the Average Number of Calculi.*

	No. of cases.	No. of calculi.	Average No. of calculi.
Recoveries	320	576	1.8 each
Deaths	132	746	5.6 “
Total	452	1322	3.— “

We have found no tables by which we can compare perineal and supra-pubic lithotomy in the matter of the number of calculi removed from each patient. In our special tables of statistics is one, giving the results when the numbers of calculi could be ascertained. In it it is assumed that there was only one calculus whenever it has not been stated that there were more. From it the following is drawn:—

TABLE F.—*Showing Mortality in Each Sex.*

LATERAL OPERATION.					SUPRA-PUBIC OPERATION.			
Sex.	Cases.	Recoveries.	Deaths.	Death ratio.	Cases.	Recoveries.	Deaths.	Death ratio.
Male .	669	578	91	1 : 7.35	383	258	125	1 : 3.06
Female	35	33	2	1 : 17.50	82	72	10	1 : 8.20
Total .	704	611	93		465	330	135	
Ratio of all cases 1 : 7.57					Ratio of all cases 1 : 3.44			

The relation of sex to the result is shown in this table. The figures of the lateral operation are from Crosse's essay. In our own we have assumed every case to have been male, unless distinctly stated to have been female.

From this table we obtain also the comparison of the results of both methods, taking all the cases gathered, without exception. This gives us a ratio of deaths to operations of—by lateral lithotomy, 1 to 7.57; by supra-pubic lithotomy, 1 to 3.44.

To conclude this part of the subject, we shall present one more view of it.

TABLE G.—*Comparing Similar Phases.*

	Lateral Operation.	Supra-pubic Operation.
Average age of each patient . . .	28 years.	39 years.
“ Weight of each calculus . . .	5 7.25	5 32.00
“ Mortality	1 : 7.57	1 : 3.43

Thus we discover that with an average age of the patients 11 years, or more than a third, greater, and an average weight of calculi $4\frac{1}{2}$ times as great as those of the lateral operation, the general mortality is but little more than twice as great in the supra-pubic operation ; that it is but little greater in calculi over 3j in weight, absolutely less in all over 3ij, with all the disadvantages under which it has laboured.

With these facts before us, and recalling the considerations advanced in the beginning of our review, let us pass to the last division of it.

Theoretical Comparison.

This naturally divides itself into four parts :—

- I. The approach to the interior of the bladder.
- II. The conditions for seizing the calculus.
- III. The facilities for extracting the calculus.
- IV. The accidents which may follow the operation.

These we will examine in order.

1. *The Approach to the Interior of the Bladder.*—The structures divided in perineal lithotomy are very numerous and important. Beside the skin, fascia, and muscles of the part, it is filled with a vascular supply of considerable magnitude, and a great number of nerves and lymphatics. The nerves are of the most exquisite sensibility and important sympathetic connection, and the lymphatics are of considerable size and communicate immediately with the internal iliac glands. The vascular supply is of special importance. From the exterior to the cavity of the bladder, the arterial and venous trunks are numerous and large. These are the hemorrhoidal, perineal, and pudic arteries and veins, beside the artery of the bulb, the vessels of the prostate and prostatic plexus of veins. These furnish constant liability to hemorrhage, and there are many cases on record of fatal results from wounding them.¹ They also render a patient liable to an accident which is more apt to occur and quite as dangerous ; that is, the absorption of poisonous materials into the system. We cannot here quote authors to demonstrate the dangers of hemorrhage. There are few who have not recognized and acknowledged it ; but we will cite some remarks of Sir Wm. Fergusson² on this point. Presenting a specimen of a bladder

¹ For fuller details in regard to this, *vide* Jas. Spence, “Remarks on the Sources of Hemorrhage after Lithotomy,” Liverpool and London Monthly Journal, March, 1841, p. 157 ; also Wm. Coulson, “Lithotomy and Lithotrity,” London, 1853, 8vo., chap. xiii.

² Wm. Fergusson, “The Progress of Anatomy and Surgery,” London, 1867, 1 vol. 8vo., p. 215.

with its vessels carefully injected, and calling attention to their multiplicity at the neck, he said: "The lithotomist may reflect as he looks on such a specimen as this. He may think of the bleedings he has seen; and if imbued with the views of some as to purulent and poisonous absorption and pyæmia, he may possibly imagine that he has fallen upon a good theory, if not a certain cause of death after lithotomy."

In supra-pubic lithotomy there are encountered no nerves of any importance, very few lymphatics, and not a bloodvessel of the least significance. It is true that there are some cases in which hemorrhage is recorded as having occurred; but these were due to anomalous circumstances, as examination of them will disclose. It is extremely rare, as every anatomist knows, for any vessels large enough to give more than a trifling hemorrhage to be found in the track of the operator by this method.

The proximity of the rectum constitutes another peril of lateral lithotomy. There are a number of cases on record where it has been wounded, both by accident and by design, on account of the impossibility of extracting a calculus except thus. The consequences of this we shall see later. Of course such an accident could not occur in the supra-pubic operation, except by most inexcusable want of skill and care.

In perineal lithotomy it has not infrequently happened that the staff was missed or left by the knife of the surgeon, and the pelvic fascia opened. This is mentioned, among others, by Erichsen¹ who says: "Indeed, I believe that there is more danger of doing mischief in the withdrawal than in the entry of the knife; for, if it leave the staff for a moment, all guide is lost and the edge may sweep downwards through the base of the prostate and its investing capsule."² Of the danger of missing the urethra, he says: "It is, I believe, an inevitably fatal accident. . . . I was present many years ago at the *post-mortem* examination of a fatal case of lithotomy, in which perhaps the most skilful operator of that day had opened the bladder beyond the prostate, leaving the urethra untouched. The patient died from the cause first stated."³

Beside these there is danger of opening the tissues between the rectum and the bladder. This has happened to a number of surgeons and has doubtless been the reason why some of them, after detecting calculi by sounding, failed to find them when they had, as they imagined, opened the bladder. To show that we do not overstate this liability, we will again quote Mr. Erichsen. "I have known this to occur in several instances to hospital surgeons of skill and experience, the forceps being passed into this space under the supposition of its being the bladder; and in every case the patient died unrelieved. . . . In young children, lithotomy is from this cause always an anxious operation."⁴

¹ Surgery, vol. ii. p. 683.

³ Op. cit., vol. ii. p. 678.

² Op. cit., vol. ii. p. 690.

⁴ Op. cit., vol. ii. p. 683.

Supra-pubic lithotomy is not liable to any such danger; for in many cases the eye and in every case the finger can direct each step.

It seems almost superfluous to advert to the matter of wounding the peritoneum. Such an accident may, in rare cases, occur in perineal lithotomy from some of the errors in directing the knife; but it should never happen in supra-pubic lithotomy. The peritoneum lies only upon the posterior and superior surfaces of the bladder, and when this is distended there is a space of several inches from the level of the symphysis pubis to where the peritoneum is reflected upon the abdominal walls; and even if it were not so, it is very readily lifted from the bladder and kept out of the way during the operation. In *Holmes's Surgery* (iv. 467), it is stated that "the wounding of the peritoneum must be regarded as a failure in anatomical manipulation."

It is true there are in our statistics 13 cases where this did occur; but in several of them it might easily have been avoided; twice it was done intentionally; and in all cases except three, before the use of anæsthetics. This permits us to suppose struggles or convulsive movements sufficient to make such an accident quite possible; but the use of them entirely obviates this danger in our day.

It will be noticed that of the 13 cases referred to, 10 recovered; and it has been found by several operators that this accident is not nearly so much to be dreaded as might at first appear. In our day of so many operations in which the peritoneum must be cut, and whose results are so satisfactory, we can easily understand that this, occurring as an accident in supra-pubic lithotomy, need not be regarded as very dangerous. But, as has been remarked, there is no good reason why it should ever occur.

II. *The Conditions for Seizing the Calculus.*—In perineal lithotomy this may be rendered difficult by a number of circumstances. Such has been the experience not only of young surgeons but of some of the most skilful; and may be consequent upon the depth of the perineum or the shape or position of the calculus. In patients with very deep perinei, it is often quite impossible to reach a calculus with the finger, and the operator has to trust to sensations communicated very indirectly for guidance in this part of his work. A calculus may be flat and so be impossible to seize without great risk to the walls of the bladder itself. It may lie inaccessible behind an enlarged prostate, it may be adherent to the surface of the bladder, or contained in a cyst or a sac, which will not admit the blades of the forceps; or it may prove so large that the forceps cannot be made to grasp it, or so small that it eludes them entirely. Any one who has seen the lateral operation done at all frequently, must have noticed how often, in attempting to seize and withdraw a calculus, the forceps bring with them sometimes fragments of the calculus and parts of the mucous membrane of the bladder, and sometimes the latter without the former.

None of these difficulties complicate the supra-pubic operation. In

whatever part of the bladder a calculus may be, it can be reached by the finger and usually seen, if necessary. With one finger in the rectum and one in the bladder, any but the most extraordinary calculus can be fixed at the will of the operator, it can be moved about, its axes can be changed so as to place it in the position most favourable to its extraction, and any instrument used has the immediate contact of the guiding finger to direct it. The operator need be in no haste, but may and should conduct deliberately and carefully, this as well as every other part of the operation.

III. *The Facilities for Extracting the Calculus.*—The extraction of a calculus is the step in lithotomy most fraught with danger to the patient. In his work on Practical Lithotomy and Lithotrity, Sir Henry Thompson¹ presents most forcibly this danger in case of calculi of any considerable magnitude. Erichsen says² a calculus two inches and upward in diameter can scarcely be removed by the ordinary lateral operation with any degree of force which it is safe to employ.

As a matter of fact it is probable that more patients die after lateral lithotomy in consequence of the violence done to the bladder and perineal tissues in attempts to seize and extract calculi, than from any or all other causes.

How dangerous are calculi of different sizes, may be judged from my table D, where it will be seen that in lateral lithotomy the mortality is more than five times as great in calculi weighing from $\bar{3}ij$ – $\bar{3}iij$ as it is in those under $\bar{3}j$. In supra-pubic lithotomy there is very little difference.

It might be said that large calculi are not often encountered in these times. This must not be too implicitly accepted; for, in the first place, many surgeons, especially in England, are choosing lithotrity for all calculi of small size, and the result of this must be to leave larger calculi alone to lithotomy, and writers upon this subject are already anticipating a higher rate of mortality in consequence of this. In the second place, large calculi are not so infrequent as might be supposed. In 1868 Augustus Brown³ had a patient who died unrelieved of three calculi weighing respectively $\frac{3}{4}$ lb., less grs. xx; $\frac{1}{2}$ lb., less grs. xl; and grs. xl: total $1\frac{1}{4}$ pounds.

In 1874 we have reported two cases of bilateral lithotomy by Wm. May,⁴ of Washington, in one of which the calculus weighed $\bar{3}viiij$, and in the operation (which had required "the whole strength of the operator"), was broken in half; only one-half was extracted, and the patient died in five days. At the post-mortem the soft parts were torn to remove the remaining half. His own opinion of this case was that the supra-pubic operation would have been impossible because the bladder could not be injected. It may be questioned, it appears to us, whether this patient's

¹ Sir Henry Thompson, "Practical Lithotomy and Lithotrity," 1 vol. 8vo., London, 1871.

² Op. cit., vol. ii. p. 686.

³ Transactions of the Pathological Society of London, vol. xix. p. 277.

⁴ American Journ. of Med. Sciences, Oct. 1874, p. 442.

life was not sacrificed to the prevailing state of information in regard to supra-pubic lithotomy.

This same year we witnessed two operations through the perineum which terminated fatally. One was that of Dr. H. Lenox Hodge, at the Presbyterian Hospital in Philadelphia, where after vain attempts to extract or crush, continued for a very long time, he speedily and easily removed a calculus by supra-pubic operation; and the other, one of Dr. Harrison Allen, at the Philadelphia Hospital, in which he removed a large calculus after long protracted efforts.

It was the impression made upon our mind by these last two operations which led us to examine this subject, and the conviction has deepened as we have studied it, that a primary operation above the pubes would have offered to these patients a good chance of life, whereas the perineal certainly caused the death of one and probably of the other.

Examining the statistics, we find that calculi of 3xxjss and 3xxij have been extracted successfully by the supra-pubic method, and that for calculi above 3ij it has been more successful, in spite of all the adverse circumstances under which it has been used, than the lateral with all its advantages.

Before leaving this division of the comparison, we must speak of crushing a calculus *in situ*. This is a possibility in every method of lithotomy, but one full of danger. It inflicts so much violence upon the bladder and the wound, that Sir Henry Thompson declares it to be very undesirable, and Erichsen¹ says it "would probably be fatal to the patient." Rather than this he would advise doing the recto-vesical operation in addition to the one already attempted.

This procedure, then, seems so objectionable as not to be considered capable of introducing any favourable element to an operation which has not succeeded without it, and may be dismissed altogether.

IV. *The Accidents which may follow the Operation.*—Most of the fatal results of lithotomy are probably to be attributed, not to the method employed, but to the systemic condition of the patients. Still there are some special dangers to which certain methods expose a patient, which must be examined.

The only ones of consequence that have been urged against supra-pubic lithotomy are, peritonitis and urinary infiltration.

These have been asserted again and again to constitute the great objection to it. But we cannot find upon what grounds, except a general impression that it must be so. Many who by their voices have contributed to increase and perpetuate this impression cannot have been able to examine the subject carefully, and must have accepted and adopted too readily this view.

By referring to the statistics here gathered, it will be seen that there are

¹ Op. cit., vol. ii. p. 687.

in these 478 cases only 6 that died of peritonitis, and 7 of urinary infiltration. Some of these, too, had other affections sufficient to account for their death. On the other hand, it may be said that some must have died of these causes where it has not been so stated. This may be quite true, but in the absence of such statement it is not fair to base a comparison upon the assumption.

The former of these accidents is recognized as following lateral lithotomy, as well as supra-pubic; and in both cases must result from some unfortunate step in the operation, and not attach as inseparable from its proper management.

The same is true of urinary infiltration. It ought not to occur. It is said that in supra-pubic lithotomy, we have not sufficient drainage of the bladder. But this seems to me to be an error. Unless there be some organic disease of the urethra, it will serve this purpose quite well. There are a number of cases on record, where patients withdrew their catheters, placed in the urethra for draining the bladder, immediately after the operation, and no evil resulted. Beside, there are not wanting surgeons who think that no fear need be entertained because for a while the urine passes out through the wound. Belmas says¹ that this danger is over-estimated, because purely theoretic, rarely observed, and now easily guarded against. Souberbielle² says it must be remarked that the passage of the urine by the wound is not painful at any period of the operation. There are also many cases on record that go to show how harmless this much-dreaded accident may be. Humphry, in giving his case of the supra-pubic operation, tells of another occasion, where by a false passage made there followed diffuse urinary infiltration of the scrotum and abdomen, from which the patient readily recovered. He comments upon it to indicate the same view as here expressed. Prof. Willard Parker, of New York, in 1854 did supra-pubic cystotomy in a case of rupture of the bladder and profuse urinary infiltration, and his patient made a good recovery.³

We could go on citing cases, but our only desire is to lead to a deliberate judgment upon this point, instead of the mere repetition of that opinion which has so long gone unchallenged.

On the other hand, there are dangers to which perineal lithotomy is liable, which cannot be charged against supra-pubic.

First, then, secondary hemorrhage may follow it; not a very common accident to be sure, but one that occurs frequently enough to deserve mention, and to which allusion has already been made.

Incontinence of urine, also. This is especially the case in women. Dudley considered it "alone an ample reason for preferring the high operation always in their case, when the calculus is very large and firm."⁴

¹ Op. cit., p. 301.

² Mém. de l'Académie, tome viii. p. 94.

³ Transactions New York State Med. Soc., 1867, p. 345.

⁴ Boston Med. and Surg. Journal, Oct. 19, 1836, p. 167.

Men, too, have been left, as recorded, with an incontinence scarcely less intolerable than the calculi from which they had been relieved.

Urinary fistulæ sometimes follow, instances of whose occurrence can be found scattered through the cases published.

Recto-vesical fistulæ are as likely to occur, and are much more to be dreaded. These constitute an affection almost as bad as the calculus. It is fortunate that they do not very often follow; but there is always a liability to them from the slightest deviation of the knife in the operation, or subsequent sloughing from bruising the tissues in extracting a large or rough calculus.

Finally, a danger which has of late been more thought of than ever before, is the serious sequence of impotence. It is impossible to estimate how often this supervenes upon lateral lithotomy; but doubtless it is much more common than is usually supposed. Attention was called to it as long ago as the time of Heister, who says¹ that patients operated upon by this method are often rendered impotent or partially so. A. K. Lindesay, of Calcutta, gives a case of impotence following the operation.²

Malgaigne has recorded two cases of impotence and incontinence,³ coming under his own observation. Aston Key says he knew of one case.⁴ A. Davidson, physician to the Queen of Madagascar, quotes Mr. Bryan, as saying: about 1840 he examined at every opportunity he had, the subjects operated upon for lectures, and every case had the prostrate divided and the vesiculi sliced into.⁵ W. F. Teevan gives four cases where impotence unmistakably followed lateral lithotomy, and calls attention to the importance of considering the danger of it.⁶

Sir Henry Thompson, in 1871, used the following language:⁷—

“But mark one essential difference between these two cases: one child has a large wound across very important parts; the other has none. Who shall say in that former case what is divided and what is not? The little prostate of such a baby is much more than cut through completely; but what of the seminal ducts, &c.? I have often thought I should like to know the subsequent condition in adult life of twenty patients cut for stone in infancy; and to ascertain what, if any, injurious effects resulted to those organs recognizable at that period of life.”

Dr. Wm. G. Porter has informed us of a case where a man who had had children by a former wife, upon marrying again, after being subjected to the lateral operation of lithotomy, had no more children.

This particular accident may well be made the subject of special investigation; but in this place it is only possible to call attention to it and give

¹ *D. Laurentii Heisteri*, “*Institutiones Chirurgicæ*” 2 vols., 4to., Amsteladami, 1747. ii. 5, cxlii.

² Transactions Med. and Physical Soc. of Calcutta, vol. v. 1831, p. 268.

³ Journ. de Médecine, Chirurgie et Pharmacologie, tome xx., Paris, 1855, p. 548.

⁴ Guy's Hospital Reports, vol. ii. 1837, p. 26.

⁵ Edinburgh Med. Journ., May, 1873, p. 1057.

⁶ Transactions of Clinical Soc. of London, vol. vii. 1874, p. 179.

⁷ Lancet, Oct. 1871, p. 512, American reprint.

these cases already collected. It seems scarcely necessary to say that supra-pubic lithotomy could not be followed by such results.

It will be naturally asked, then, what have been the causes of death after operations by this method? and what relation does it bear to them?

In seeking a solution to this question, we have examined all those cases where it was possible actually or probably to ascertain the cause. These have also been arranged in two tables, one containing such as seem to have resulted from sequelæ common to all methods of lithotomy, and the other, those which appear to have been due to the method itself, as distinguished from others.

In the carrying out of this plan there may be some error; but we have endeavoured to put each case where it properly belongs, so as to make a fair presentation of the matter.

TABLE I.—*Deaths attributable to the Method.*

Failure to remove calculus	3	Peritonitis	6
Hemorrhage	2	Pelvic abscess	1
Iliac abscess	1	"Terrible operation"	1
Peritoneum cut or burst	3	Urinary infiltration	7
" detached	1		
		Total	25

TABLE II.—*Deaths not attributable to the Method.*

Atheroma and fatty heart	1	Nephritis	2
Abscess into stomach	1	Not determinable	21
Carcinoma of bladder	2	Perineal operation complicating . .	12
Congestion of brain	1	Phlebitis	1
Convulsions	1	Phthisis	1
Cystitis	2	Pneumonia	2
Diarrhœa	2	Previous very bad condition . .	11
Diphtheria	1	Pyelitis and suppurative nephritis .	18
Effusion into brain	1	Pyæmia	4
Emesis and inanition	1	Renal calculus	3
" from chloroform	1	Stated as not due to operation . .	1
Feebleness	1	Tuberculosis	1
Gangrene of lung	1	Typhoid fever	1
Gastritis	3	Uræmia	1
Heart clot	2	Worms	1
Indiscretions of patient	5	Unjustifiable procedures in operating	2
Meteorism	2		
		Total	110

In summing up this part of our subject, we conclude that there are two dangers to which all methods of lithotomy are liable, viz.: peritonitis and urinary infiltration, but that, so far as statistics discover, these are no more to be feared in the supra-pubic than in any other method. Beyond this, if our conclusions thus far have been just, we have a number of hazards connected with perineal lithotomy to which supra-pubic is not at all open; these are hemorrhage, incontinence of urine, perineal fistulæ, recto-vesical fistulæ, and impotence.

If these, then, be the facts, is not this method deserving of more atten-

tion and a fairer trial than it has yet had? Does it not, theoretically and by its actual results, commend itself to the candid judgment as a method which offers sufficient probability of success, if rightly and carefully executed, to lead to its application in other cases than the most desperate? For many years it has been assigned this position of a "forlorn hope." Shall it not be some day placed where, with less disastrous obstacles, it may win success without having its victories made to seem like defeats because of the losses rendered inevitable by the field to which it has been limited?

One thing is reassuring to him who studies the subject. Every one who has done this with much thoroughness, who has examined fully the literature of it, presently ranges himself upon the side of its defenders. Günther, who collected 260 cases, and prepared the most complete work upon the subject yet published, says, "were the operation more practised, it would be more esteemed;" and it seems that were there more known about it, it would have a place at least equal to that of lateral lithotomy.

The Method of performing Supra-pubic Lithotomy.—Preparatory treatment should be conducted upon general principles.

During the operation the surgeon should constantly bear in mind that *safety is more to be desired than speed*, and each step should be carefully and deliberately accomplished.

Previous to the operation the pubes of the patient should be shaved, and the skin of the hypogastrum and groins anointed with some simple ointment to protect them from excoriation by any fluid that may come from the bladder. The urine should be all drawn off, and, if possible, the bladder washed out, by means of a double catheter, with warm water, to which some antiseptic has been added. The patient should then be placed upon a table, of height convenient for the surgeon, with a pillow under his buttocks and loins, so as to raise them a few inches, in order to cause the mass of intestines to gravitate toward the upper part of the abdominal cavity.

While the incision of the skin is made, the legs may be held forcibly extended over the edge of the table, each by one assistant, so as to make the hypogastrium tense. They may be separated so that the surgeon may stand between them, or this may be omitted at discretion, if he prefer to place himself at the side of the patient. As soon as the skin and superficial fascia are divided to an extent of three inches in a line vertical to the symphysis pubis, the legs should be elevated and flexed upon the thighs, and these upon the abdomen, so as to place the patient's heels against his buttocks, and relax the abdominal muscles, permitting the intestines more freedom to leave the pelvis, and the breathing to become more costal. The knees should now be held pretty widely separated, while the surgeon carefully *dissects* through any fat he may encounter, and exposes the linea alba and pyramidalis muscle. These are to be divided upon a director, so as not to involve any other structures. If the calculus be large it may

be well to make a slight transverse nick in each rectus muscle at a point one and a half inches above the symphysis to avoid danger of subsequent hernia. This should not be done unless absolutely necessary. After this the transversalis fascia is to be divided very carefully, and the bladder will be exposed.

If at any time the peritoneum be met, it must be gently pushed upwards, and held out of the way by an assistant. If due care be used it is hardly possible that it will be wounded.

When the bladder is exposed, it will be found collapsed in the pelvis, and at this point a careful and deliberate injection with warm, and, I think, preferably mucilaginous, water, to which some antiseptic has been added, should be made through the urethra. The amount of this must be regulated by the eye or finger of the surgeon, who should judge when it has been carried far enough for his purpose, and not subject the bladder to any needless strain. If the bladder can be distended so as to offer a sufficient surface to the knife it will so much the more facilitate the rest of the operation. If this cannot be done a sound may be passed per urethram, and made to lift its anterior wall up behind the pubes. (It does not appear that the sonde-à-dard offers any advantage over this method.)

In either of the cases supposed, the next step should be to hook the top of the anterior bladder wall firmly up with a strong tenaculum, of the breaking of which there should be no danger, and have it held by an assistant.

When the bladder is thus steadied, the surgeon should—if the injection have been effected—thrust a straight bistoury into its cavity just below the line of the tenaculum, and carry it down, if possible by simple pressure, almost to the symphysis pubis. The line of the thrust should be in the direction of the axis of the pelvis, so as not to transfix both sides of the bladder. If the sound have been used to raise the bladder, the surgeon may more leisurely execute this opening of its cavity.

When this is done the surgeon must be careful that, in his haste to pass his finger into the bladder, he do not tear it from any of its connections. The finger should be gently insinuated into the cavity and explore it. If the calculus be small, it alone may be able to effect the extraction, or it may be aided by another, or the thumb, or the forceps may be introduced and remove the calculus. The fingers in the bladder may, if necessary, be seconded by one or two in the rectum in placing the calculus in the direction most conducive to its safe extraction. This should be done very gently. No force should be exerted, and if any parts do not readily pass through the wound it is much better to nick its edges than to violently drag the calculus through.

This being effected, the interior of the bladder should be carefully explored with the finger, and, if any fragments be found, they should be removed, and the cavity washed out with a syringe.

Afterward, we think, the results of some of the German surgeons indicate

that the best plan is to sew *the bladder* up tight. The Lembert suture, as used for wounded intestines, seems to answer the purpose best by bringing together two freshly cut surfaces, with some tissue between where the silk is placed and the unhealthy mucous membrane. If this suture cannot be applied, any that is used should if possible bring together two external surfaces of the bladder.

We have been led to believe, also, that it is best not to sew up the wound in the abdominal walls. This may in some cases delay union of them a little longer; but would also give a greater security against any burrowing of pus that might occur if it had not free exit. This external wound should be simply dressed; a little lint saturated with carbolized oil may be laid upon it and loosely secured, the treatment being directed to absorb any discharges and allay irritation. No force should be exerted, only such gentle control as may keep it from slipping from its place. The aim should be to keep the wound in the bladder firmly closed, and make the rest of the incisions act like simple incised wounds.

With this the operation is complete. The anæsthesia being suspended, the patient should be placed in bed in a *semi-sitting posture*.¹ By this the weight of the intestines will press the contents of the pelvis and the wounded tissues firmly together, and tend to prevent any infiltration or burrowing of pus.

If after the operation the urine of the patient pass freely by the urethra, the subsequent treatment is to be conducted upon general principles. If it do not, the catheter must be used often enough to prevent any considerable distension of the bladder, or strain upon the sutures in its wall. And a watch must be kept that the vesical orifice of the urethra do not become occluded by pus, or blood, or gravel. Washing out with a double catheter will overcome this if it occurs. If the healing go on without accident, the sutures will come out through the external wound, which itself will heal by gentle suppuration and granulation, and the wound of the bladder will become consolidated with the external wound. This has been observed in a number of cases by post-mortem examination, and never has caused any trouble. If a subsequent operation should ever be needed for another calculus, it renders the second operation very simple and devoid of danger. This too is attested by experience.

In concluding the review of our subject, we will give, as a contribution to its literature, a table of 42 cases, operated upon by American surgeons, by this method. They are selected from the entire number collated, and are believed to include nearly all that have ever been done in this country. They have been gathered from many journals and surgeries, and also by correspondence, and will, we trust, be of sufficient interest to warrant their early publication.

¹ This plan has succeeded well in some cases of Côme, and of Robertson, of San Andreas, California.

No.	Surgeon.	Date.	Age of patient.	Sex.	Size or weight of calculus.	Recovered.	Died.	Time after operation in days.	Reference.	Remarks.
1	Gibson,	1824	old	M.	2 calculi	..	D.	....	Gibson's Surgery, 1835	Was doing very well, but withdrew his catheter, and peritonitis set in.
2	Carpenter,	1827	8	M	2 "	R	..	....	Am. Med. Rec., No. 39, 1827, p. 199; Eclectic Journ. of Medicine, vol. ii, May, 1838, p. 288	
3	McClellan,	..	..	..	.....	R.	..	....	Gross, Diseases of Urinary Organs, p. 632.	
4	"	..	..	..	.....	R.	..	....	" "	
5	"	..	..	..	.....	R.	..	....	" "	
6	"	..	..	..	.....	..	D.	....	" "	Constitution very much shattereded by previous disease.
7	"	..	..	..	.....	..	..	....	" "	
8	Gardner,	1844	42	M.	3ixss	R.	..	....	Gross, Kentucky surgery, p. 105; Letter of Gardner, Feb. 16, 1875	Immediately after failure of perineal operation.
9	W. L. Atlee,	1848	man	M	circumference 4"	R.	..	....	Eve, Remarkable Cases in Surgery	Laterat operation had failed six months before.
10	DeValetti,	1849	"	M.	3iv	R.	..	38	New Orleans Med. and Surg Journ. Sept. 1849, p. 176	Calculus 18 years.
11	Delery,	1850	12	M.	3ix	R.	..	30	L'Union Médicale de Louisiana, No. 3, March, 1852, p. 46	Applied sulph. of iron & camphor to prevent urinary infiltration.
12	Pope,	1850	22	M.	3ij 3vss, & as much more	..	D.	3	St. Louis Med. and Surgical Journal, Sept. & Oct. 1864	Did perineal operation also, and tunnelled through and through the calculus.
13	W. J. Johnson	1851	18	M.	3vj	..	D	4	Southern Med. Jnl., Dec. 1851, p. 727	Perineal operation had failed, and also a great many ineffectual attempts to crush.
14	Parker,	1853	53	F.	2" X 1½"	R.	..	....	N. Y. Med. Journ., Mar. 1853, p. 252	
15	"	1853	53	F.	.....	R.	..	....	" "	
16	"	1854	47	F.	.....	R.	..	....	" "	
17	"	1855	62	F.	.....	..	..	....	Letter of Dr. Parker, Sept. 21, '74	
18	"	1857	53	M.	.....	..	D.	4	" and also Amer Med. Times, July 7, 1860	Died of emesis from inflammation of stomach.
19	Pitcher,	1854	8	F.	3ij	R.	..	..	Letter of Dr. S. H. Douglas, Oct. 5, 1874	
20	Eve,	1855	66	M.	3j 3ij	R.	..	18	Trans. Am. Med. Assoc'n '71, vol. xxii. p. 273	
21	"	1858	28	M.	3iv 3ij	..	D.	3	" "	
22	Weber,	1856	4	F.	.....	R.	..	12	N. Y. Med. Journ. July, 1856, p. 45	
23	Noeggerath,	1857	8	M.	3ij	R.	..	25	N. Y. Med. Journ. January, '58, p. 9	
24	Hewitt,	1859	19	M	.....	R.	..	21	N. Y. Med. Journ. March, 1859, p. 217	
25	Krackowizer,	1859	1½	M.	.....	..	D	1	Am. Med. Times, July 7, 1860	Died of emesis from chloroform
26	"	1860	3	M.	.....	..	D.	..	" "	Died of pneumonia.
27	"	..	boy	M.	.....	..	D.	2	" "	
28	"	..	"	M.	.....	..	D.	..	" "	
29	"	..	"	M	.....	R.	..	..	Letter of Dr K., Sept. 23, 1874	
30	"	..	"	M.	.....	R.	..	..	" "	

No.	Surgeon.	Date.	Age of patient.	Sex.	Size or weight of calculus.	Recovered.	Died.	Time after operation in days.	Reference.	Remarks.
31	Wood,	1860	58	M.	pigeon's egg	..	D.	2	Am. Med. Times, July 7, 1860	<i>Peritoneum cut in two places. To remove a shrapnel shot.</i>
32	Felton,	1862	..	M.	.....	..	D.	1	Nashville Journ. Med. and Surg, Jan. 1867, p. 502	
33	Mackenzie,	..	2½	..	.....	R.	..	....	Letter from Dr. M., Aug 29, 1874	
34	Westmoreland	1863	7	F.	.....	R.	..	....	Letter from Dr. C. H. Mastin, Jan'y 1, 1875	
35	Robertson,	1865	56	M.	3j 3vj	R.	..	35	Pacific Med. & Surg Journ. April, '68, p. 499	Placed in semi-sitting posture for 48 hours after operation
36	Guido Bell,	1867	4½	M.	grs. xvj	R.	..	26	Memorabilien, Heilbronn, Mar. 28, 1874, p. 552	Bladder sewed up; catheter pulled out same even'g.
37	"	1872	3	M.	5jss	R.	..	21	"	<i>Peritoneum cut, but no harm resulted.</i>
38	Bock,	1873	6	M.	3j	R.	..	21	Letter of Dr. B., Sept. 10, 1874	Immediately after failure of perineal operation.
39	"	1874	3	M.	.....	R.	..	....	Letter of Dr. B., Dec. 5, 1874	
40	H. Lenox Hodge,	1874	52	M.	5ijss	..	D.	2	C. W. D.	
41	Edw'd Geddings,	1866	8	M.	2½ long	..	D.	10	Letter of Dr. G., May 15, 1875	
42	Bailey,	1874	2½	..	54 grs.	R.	..	25	Letter of Dr. B. May 28, 1875	Letter from Dr. G., May 13, 1875
43	Eli Geddings,	1844	40	M.	.....	R.	..	....	Letter from Dr. G., May 13, 1875	

Recovered 28

Died 14

Not stated 1

Total, 43

ART. IV.—*Lesions of the Optic Nerve and Pupil in Connection with Certain Affections of the Spinal Cord, with Special Reference to Pott's Disease.* By CHARLES S. BULL, M.D., Ophthalmic Surgeon to Charity Hospital; Assistant-Surgeon New York Eye and Ear Infirmary; Microscopist to Manhattan Eye and Ear Hospital.

WITHIN the past ten or fifteen years, many observers, in Europe and this country, have devoted much time to examining the eyes of patients affected with lesions of the nerve-centres, and much has been written upon the intra-ocular manifestations of such diseases. The ophthalmoscope has been extolled for what its ultra admirers have called the "wonderful, almost marvellous, utility which science has thus conferred upon the ophthalmologist." But a zeal, admirable in the beginning, has gone too far, and an unbounded admiration, unchecked by sound judgment, has brought the

ophthalmoscope into undeserved disrepute, by attributing to it impossible powers. With too many observers, both past and present, "the wish has been father to the thought," and those of us who are honest in our endeavours to advance the science of ophthalmology, have long since learned that in making an ophthalmoscopic examination we should not lean too much on authority, or what passes as such. Many things have been reported as seen with the ophthalmoscope, and described as pathological, which either existed solely in the brain of the observer, or if they had a real existence, were not pathological. Edward Long Fox says, very justly, that it is well to realize what an instrument like the ophthalmoscope will *not* do, as well as what it will do. In most of the diseases of the spinal cord, where there are any symptoms of ocular trouble, these symptoms are of three kinds, viz.: 1st, those pointing to the pupil, either mydriasis or myosis; 2d, those pointing to the external muscles of the eyeball, causing diplopia and strabismus; and 3d, those pointing to the optic nerve and retina, giving us amblyopia and amaurosis. The latter symptom is the one to which I wish particularly to call attention, and here it may be well to recollect that pathology has taught us that the character of a lesion of the nervous substance is not to be inferred from the acuteness of the symptoms in respect of their development in time, and that the amount of the lesion also is not necessarily in proportion to the gravity of the symptoms. A very small amount of disease almost anywhere in the nerve centres may produce fatal results. Irregularity of the pupil, diplopia, and nystagmus, though perhaps as constant symptoms accompanying spinal lesions as the amblyopia is, are yet of less consequence both to physician and patient.

Amblyopia occurs most frequently in the old "tabes dorsalis," and is often the first symptom of the disease, but it may be entirely absent throughout the whole course of the affection.

In a monograph upon sub-occipital white swelling by Moustapha, published in 1874, the author says that a certain number of nervous phenomena, like dilatation or contraction of one or both pupils, may appear in an isolated manner in compression of the cervical portion of the cord, and *Ogle* has remarked the modifications of the pupil in several cases of Pott's disease of the cervical region of the spine. Some of these irregularities of the pupil are quite remarkable, such as the case reported by Eulenburg, in which the right pupil remained dilated during four weeks, after which it gradually regained its normal dimensions. In a monograph by Joffroy entitled, "La pachyméningite cervicale hypertrophique d'origine spontanée," a case is reported of progressive muscular atrophy with paraplegia, great pain in the limbs, lesion of the anterior horns of gray matter and symmetrical sclerosis of the lateral columns, in which there was an elliptical dilatation of the right pupil. In a second case of occipito-cervical neuralgia, and cervical paraplegia accompanied by muscular

atrophy, the pupils were markedly and equally contracted, and there was a rotatory nystagmus round an antero-posterior axis, which was increased when the patient looked to the right or left.

In speaking of sclerosis, Dr. Fox distinguishes two varieties, the spinal and the cerebro-spinal, but the same ocular symptoms occur in both forms and with about the same intensity. Charcot says that the diplopia in spinal sclerosis is a phenomenon of the beginning of the disease, and is generally transitory, but the amblyopia is a lasting and very frequent symptom in cerebro-spinal sclerosis "*en plaques*," which, however, rarely leads to total amaurosis. This is particularly worthy of note, in view of the fact that the autopsies of such cases show patches of sclerosis completely surrounding the optic nerves, and yet only a moderate amount of amblyopia was present.

This apparent disproportion between symptom and lesion is one of the strongest arguments in favour of the idea that the functional continuity of the nerve-fibres is not absolutely interrupted.

In these cases nystagmus is a very frequent symptom, and, hence, the ophthalmoscopic examination is rendered extremely difficult, but we often find complete integrity of the optic disk, even when the amblyopia is marked; sometimes we meet with a partial atrophy, and less often with a total atrophy of the optic nerve, with or without an excavation. Another fact that I have noted is, that in some cases of disseminated sclerosis, the amblyopia is preceded or accompanied by a varied photopsia. But Dr. Colsmann, of Barmen, goes altogether too far in saying that the latest investigations prove almost constant coexistence of atrophy of the optic nerve with gray degeneration of the cord; for I have myself seen quite a number of cases where there were no signs of any affection of the optic nerve.

Traumatic lesions of the spinal cord, particularly in the cervical and superior dorsal regions, frequently give rise to abnormal oculo-pupillary troubles. We sometimes meet with contraction of one or both pupils, and sometimes with dilatation; and we may even see the two different states succeed each other in the same eye, and here Charcot tells us that the spasmodic dilatation always precedes the paralytic contraction. Another fact, which occurs comparatively seldom and is hence less known, is that the mydriasis resulting from a permanent irritation of the cilio-spinal region of traumatic origin, may last continuously for several weeks. These modifications in the size and shape of the pupil may be directly due to compression of the superior region of the spinal cord, for many observers have seen them in cases of Pott's disease of the cervical vertebræ. Rollett reports a case of dilatation of both pupils, accompanied by a moderate degree of exophthalmus, which preceded for some time the motor paralysis of the legs.

Though a fact well known to ophthalmologists and neurologists, it is

perhaps not so well understood by the general practitioner, that lesions of the motor and sensory nerves of the eye are quite common in diseases of the spinal cord. Thus spinal neuralgia of the intermittent type may affect the vision, and Jacobs reports a case of a woman, æt. 42, who suffered from hematemesis and intense neuralgic pains in the cervical region of the cord, who had double mydriasis and amblyopia; there were retinal hemorrhages with neuro-retinitis, and the case ended in amaurosis from atrophy of the optic nerve.¹ Dujardin and Beaumetz, in a monograph upon this subject, report eight cases of chronic disease of the spinal cord, complicated by visual disorders. The lesions of the optic nerve and retina, and the diplopia and mydriasis or myosis are due essentially to lesions of the cord propagated to the optic and motor oculi nerves, and sometimes the fifth pair of cranial nerves becomes implicated. In ataxy the pupil is at first very much contracted and occasionally distorted, but this may very suddenly give place to a pronounced mydriasis. In explanation of this lesion, it is stated that while the superior cervical ganglion may appear unchanged to the naked eye, yet microscopically it will be found more or less degenerated. But to this we say, that in some cases no such lesion of the ganglion has been found, and we must then look for the lesion in the spinal cord, near the point where the filaments supplying the iris are given off. It is unimportant to the production of the oculo-pupillary symptoms, whether the anterior or the posterior columns of the cord be diseased; it is only needful that what is called the cilio-spinal portion should be affected, that is between the last cervical and tenth or eleventh dorsal vertebræ inclusive. Another point to be remembered is that any attempt to trace a continuity of morbid tissue, or direct connection, between the disease in the cord and that in the optic nerves has utterly failed in the majority of cases where autopsies have been made.

The affections of the optic nerve and also those of other tissues of the eye occurring in the course of chronic disease of the spinal cord, are in many instances due to disordered nutrition, rather than to any actual disease of these parts. We know from experimental physiology that many cases of disordered nutrition of the eye in certain animals, after section of the lateral half of the spinal cord, may be explained by the origination or intervention of inflammation around the parts injured. The ulceration and perforation of the cornea, purulent conjunctivitis, etc., observed by Brown-Séquard in guinea-pigs, have also been seen by Vulpian in frogs, after division of the corresponding half of the cord. These lesions do not always occur after such division, and it is very probable that they are only produced in cases where an inflammatory process is developed in the upper portion of the cord after division. But this matter of deranged nutrition is a very unsettled one as yet, particularly with reference to the

¹ Berl. Klin. Woch., March, 1868.

part which the sympathetic nerve plays in the matter. According to Bernard, destruction or removal of the superior cervical ganglion seems to retard the appearance of the disorders of nutrition caused by division of the fifth nerve, and a neuro-paralytic hyperæmia does not necessarily excite in the parts where it exists any particular tendency to the production of trophic troubles; on the contrary, it seems that these parts are rendered more resisting to the action of causes of disorganization, and that the disorders which are here produced are more rapidly repaired. Judging from my own observations, I think it may be said that perhaps the most common ophthalmoscopic sign accompanying spinal disease, is an alteration in the grosser circulation of the optic nerve and retina, which is afterwards followed by a still further change in the minute vessels of the disk, leading in rare instances, as in ataxy, finally to obliteration of their calibre and atrophy of the part. In discussing those affections of the spine which give rise to symptoms of disease of the eye, I shall first ask attention to those symptoms occurring in the course of locomotor ataxy, but very briefly, as I have nothing new to offer. It is known to all, that, besides the alterations of the posterior columns, we meet with changes in the posterior roots of the spinal nerves, more or less spinal meningitis of a low type, and finally alterations in some of the cranial nerves, such as the optic, motor-oculi, and hypoglossus. These lesions of the cranial nerves are generally most pronounced when the disease is situated in the cervical region of the spine. The change in the nerve centres is here a sclerosis or gray atrophic induration of the cord, one of the most prominent features in the alteration being a hyperplasia of the connective tissue or "fibrillary metamorphosis of the neuroglia," as Charcot well expresses it, at the expense of the nerve elements. Spinal meningitis, which coexists so frequently with sclerosis of the posterior columns, and which is often so exactly limited to the surface of these columns, is a strong argument in favour of the irritative nature of the lesion.

I believe that at present it is impossible to locate exactly the original focus of this irritative lesion, whether in the neuroglia or nerve elements, though Charcot thinks the latter, so that, according to him, the hyperplasia of the neuroglia would be a secondary process. However that may be, one thing is very certain, that the nutrition of the parts is markedly interfered with, and in places totally destroyed. In consequence of the congestion or passive inflammation, if such a term may be used, the capillary vessels become incrustated with granules and granule cells, and end by being obliterated. The same changes occur in the optic nerves, where amaurosis is a symptom, as the microscope proves.

The intra-ocular, or rather intra-cranial symptoms of ataxy may precede all the other symptoms, and often do so by months and even years, remaining for an indefinite period completely isolated, and the diagnosis of not a few cases of suspected ataxy has been facilitated by the ophthalmo-

scope showing a commencing atrophy of the optic nerves. Of course in these cases the same process of sclerosis exists in the brain. All the nerves going to the eye may be involved, but most frequently it is the 3d, 2d, 6th, and 4th in the order named, and more rarely the facial, hypoglossus, and trifacial. The visual troubles proper, without regard to the diplopia, are of two kinds: 1st, paralysis of accommodation; and 2d, amblyopia or amaurosis dependent on distinct lesion of the optic nerve. The papillæ may present to the ophthalmoscope two conditions: the one, always first in point of time, is a condition of hyperæmia, more or less marked, of neuro-paralytic origin, and generally soon passing into the second, which is a condition of anæmia, becoming more and more marked, until the vessels disappear and atrophy is the result. The process from beginning to end is the same as occurs in the spinal cord itself, and I believe that the degenerative action, once set up, progresses inevitably though slowly to amaurosis. This is totally distinct from the lesion occurring in optic neuritis. Some authors, such as Jaeger, Wecker, and Galezowski hold that this condition of the optic papilla is pathognomonic of sclerosis of the posterior columns of the cord; it is scarcely necessary here to deny such a statement.

As before stated, the ophthalmic lesions occurring in ataxy may precede all the other symptoms, and even for years form the only malady. This is a well-established fact, and Charcot states that a large majority of the women in the hospital of La Salpêtrière, affected with amaurosis, present sooner or later symptoms more or less manifest of ataxy. He cites two cases, one a patient æt. 55, who became blind in one eye, and within a year was totally amaurotic, and this was the only symptom for ten years, when the lancinating abdominal pains made their appearance; the second case was also æt. 55, and here the amaurosis preceded by five years the other symptoms. The amblyopia of ataxy is generally, though not always, binocular, and having once made its appearance, is, so far as my own experience goes, always permanent, and generally progressive. Nixon, however, reports (*Dublin Medical Journal*, Sept. 1874) a case of ataxy in a man æt. 28, with diplopia and marked amblyopia, with brilliant white optic disks and thread-like retinal arteries, who recovered under the administration of nitrate of silver, phosphorus, and electricity. The diplopia was cured and vision was improved, but the optic papillæ retained the same appearance. In this case the cord was not probably diseased high up, and Nixon, with many others, believes that amaurosis does not occur in posterior spinal sclerosis existing below the cilio-spinal region of the cord. The sclerosis probably occurred in distinct localized foci, as well in the brain as in the cord. The early atrophic appearance was perhaps suggestive of cerebellar disease. In this early stage of ataxy the lesion may possibly be inflammatory, but with little alteration of structure. Moreover, we should carefully distinguish a simple decolorization of the

disk as well from white atrophy as from neuritis. The rosy appearance of a normal nerve fades away and the disk takes on a cold gray hue, but with no further ophthalmoscopic change, and this must not be regarded as atrophy, for it may last for a long time, and vision may be but little or not at all affected. This appearance occurs sometimes in the amblyopia produced by tobacco and alcohol, and I think it may be affirmed that so long as this decolorization is the only sign, just so long is recovery possible, and even complete restoration of vision is not excluded.

At this late day it will not be necessary to discuss in detail the connection between sclerosis of the posterior columns of the cord and atrophy of the optic nerve. The idea promulgated by Bouchut that atrophy of this nerve occurring in ataxy is due to an impairment of power of the sympathetic nerves in the neck, is not to be considered tenable. I think that Bourneville's researches have established the fact that spinal sclerosis is not limited to particular foci, but that even apparently healthy interstitial parts are diseased. He considers that in these cases there is a diffuse neuritis of the anterior and lateral columns of the cord. Now ataxy does not give us a lesion of continuity between the spinal cord and optic nerve. In pure spinal sclerosis Bourneville and Guérard think that the optic nerve is rarely and then but slightly affected, but that in the cerebro-spinal form, amaurosis always occurs. According to Fox, general sclerosis of the brain is rare, but when it occurs it is very apt to involve some of the cranial nerves, particularly the nerves of vision. When the latter become affected, the course of the lesion is different from that in the spinal cord, for the peripheral end of the nerve suffers first, and from here the morbid process extends along the trunk of the nerve to its centre of origin.

While in certain cases of cerebral disease the atrophy of the optic nerve follows by a simple extension of the morbid process from the centre along the nerve trunk to its peripheral termination, this cannot be the case in spinal affections, since there is always a tract of normal healthy tissue between the two parts. It is much more rational to believe that parts so distant from each other may undergo the same changes simultaneously and independently of each other, and this is in fact the case. Whether the atrophy of the nerve elements is primary or is caused by chronic inflammatory action, cannot certainly be determined; for the presence of abundant granule-cells is by no means regarded by all authorities as proof of a chronic inflammation.

I have made several examinations of the optic nerves of patients who had died of ataxy, and in all the alteration appeared as a gray induration, resembling that in the spinal cord. It seemed as a rule to commence at the periphery of the nerve, and extended towards the centre. The optic tracts and corpora geniculata were sometimes involved, but beyond this point, very few traces of any morbid process could be traced with the naked eye. The affection took a centripetal course so far as the optic

nerves were concerned, while in the spinal nerves the lesion took the contrary course. Charcot thinks that the nerve tube is first affected in this process, and calls this gray induration a parenchymatous neuritis. The optic papilla is always unchanged in shape or size, and to the ophthalmoscope its contour always appears distinct. In some cases of neuroretinitis, there is a somewhat similar sclerosis or atrophy which characterizes the second form or stage of neuritis; that is, a fibrillary hyperplasia with consecutive destruction of nerve elements, but the morbid process runs a much more rapid course than in ataxy, the multiplication of nuclei is greater, and the exudation more abundant.

One word in regard to the nystagmus not uncommonly met with in this disease. It is by no means an invariable phenomenon, is generally oscillatory in character, the eye moving round a vertical axis, and is of course the result of a nerve lesion. It must depend on a lesion of the nervous centre which presides over the movements of the ocular muscles, or on some reflex condition affecting this centre. Ferrier has stated that nystagmus is an epileptiform attack of the cerebellar oculo-motorial centres, and that the cerebellum is the co-ordinating centre for the muscles of the eyeball. Now it seems to me that the sole connection between nystagmus and cerebro-spinal sclerosis is the possibility of some portion of the cerebellum being involved in the sclerotic degeneration. The nystagmus is totally independent of any voluntary or intentional act, and Leyden thinks that it is analogous to the involuntary tremulous action of *paralysis agitans*. However that may be, the occurrence of nystagmus in the course of ataxy seems to me another proof that the sclerosis or fibrillary degeneration has also affected the nerve tubes of the brain, and in all probability the cerebellum.

Leaving now the subject of ataxy with its optic nerve complications in what is still an unsatisfactory, incomplete state, we turn our attention to the symptoms of ocular lesions accompanying that form of chronic spinal disorder, generally known as Pott's disease. The subject has occupied my attention more or less for the past year, and at the last meeting of the American Ophthalmological Society, held at Newport, in July, 1874, I presented some preliminary observations upon the state of the retinal and papillary circulation in this form of disease of the spine. Since then I have been able to collect a larger number of cases, in all of which I have myself made an ophthalmoscopic examination, and many of them I have been able to keep under observation for some time, making a series of examinations at intervals varying from two weeks to a month. For the opportunity of examining and presenting many of the cases I am greatly indebted to Dr. V. P. Gibney, of the Hospital for Ruptured and Crippled, and Dr. C. T. Poore, of St. Mary's Hospital for Sick Children, for whose continued courtesy and kindness I take this opportunity of expressing my sincere thanks. As in ataxy, so in this disease, the ocular manifestations

may be of three kinds, viz., 1st, phenomena in the state of the pupil; 2d, muscular phenomena; and 3d, phenomena in the circulation or nutrition of the optic nerve; of these the muscular phenomena occur but rarely. And I may here observe that those who undertake the examination of eyes of patients suffering from Pott's disease, with the expectation of meeting with grave lesions, will generally be disappointed. Pupillary phenomena, according to Michaud, are not rare, and there have been observed the dilatation of both pupils, unilateral dilatation, and dilatation followed by contraction, with injection of the conjunctiva of the same side. In one case the left pupil was dilated and the autopsy showed a sclerosis of the left lateral column of the cord in the cervical region. It is a great maxim with some authors that acute or chronic affections of the spinal cord, without any direct or mechanical action on the eye, only act upon it in a reflex manner through the medium of the great sympathetic nerve in the neck, with its many anastomoses with the spinal nerves. This may be true for certain cases and certain forms of disease, but it most certainly will not explain all.

In some cases where primary lesion is located high up in the cord, the process may possibly extend by continuity of tissue, and thus the optic and other nerves become affected. But I regard it as a fact that in Pott's disease, the optic nerve very rarely undergoes any serious degeneration, and atrophy as we often see it in ataxy is unheard of. Of course any extended description of the pathological process occurring in Pott's disease would be out of place here, but a few words I think cannot be dispensed with. Miliary sclerosis occurs in several kinds of cerebral and spinal disease, and Kesteven concludes that it depends on some chronic morbid condition of nerve tissue, and its significance consists in its being a slow change or degeneration of the neuroglia. When found after death from some acute disease, he believes, therefore, that we must assume it to have pre-existed. According to Michaud two alterations are observed in the cord: 1st, a fibrous or trabecular sclerosis with destruction of the nerve-tubes; and 2d, a fibrillary sclerosis with healthy nerve-tubes. He thinks that they are different stages of the same process, and that between their occurrence, the cord must undergo regeneration, the fat disappearing progressively, and the myeline being reformed in the old sheath which persists. As we learn by the microscope apparently the same process goes on in the cord in Pott's disease as is met with in ataxy. The neuroglia seems transformed into a dense, resisting connective tissue; the trabeculae are thickened; the myeline cylinders have disappeared, and their place is occupied by masses of fat granulations. The spinal lesion is not confined to the point compressed, but extends to a varying distance, and does so according to laws well known since the labours of Türek, upwards and downwards along certain fasciculi of the cord; above the point of compression the posterior columns become involved, and below this point

the anterior columns are the seat of the lesion. These secondary lesions are not purely passive, and though we speak of an ascending and a descending degeneration, it is something more; it is real fasciculated sclerosis which may affect the entire thickness of the columns of the cord, or only part of them. Now in ataxy, we have seen that the same sclerosing process often occurs in the optic nerve, accompanied by atrophy of the nerve filaments, as is found in the spinal cord. But in Pott's disease, I think, it may be said that sclerosis and atrophic degeneration of the optic nerves never occur. I have examined a large number of cases, and never have I seen any atrophy of this nerve, and almost never have I met with any disturbance of the vision. After excluding ataxy, lesions of the spine *never* cause atrophy of the optic nerve, and only in very rare instances any inflammatory action.

The most common symptom met with is a moderately dilated, very sluggish, but still movable pupil, always the same in both eyes, and almost never absent. On exposure to a bright light the pupil is seen to contract very slowly and equally. In one case the time occupied in the contraction was sixteen seconds, and the average time in my cases was between twelve and thirteen seconds. The condition of the disease in the spine exerted considerable influence as well upon the condition of the pupil as upon the rapidity or sluggishness of the iris. The dilatation was most marked and the movements slowest when paraplegia was present. The location of the spinal lesion was also important in determining the pupillary phenomena. In *all* cases of spinal lesion above the tenth dorsal vertebra, and below the sixth cervical, the pupils were dilated and the motions very sluggish. When the lower dorsal and lumbar regions were involved, the pupils were generally moderately dilated, but their movements were more rapid than when the spinal lesion was in the upper dorsal region. When the lesion was high up in the cervical region, the condition of the pupils was the same as in the dorsal region.

The second variety of ocular phenomena met with in Pott's disease is the muscular, and this occurs in my opinion so very seldom that I am almost tempted to class them as coincidental. In only two cases was there any strabismus, whether primary or consecutive, in the cases examined by me, and in both these the refraction of the eyes was hypermetropic, which of itself might very easily have been the cause of the squint.

Of course the main interest centres in the condition of the optic nerve and retina. Is there any pathological condition of the nerve and retina met with in these cases of disease of the spine; any disturbance in the nutrition of the parts which might cause a loss of vision? This question, I think, may be answered in the negative, though Brown-Séquard would seem to make a distinction between idiopathic cases and those occurring from injury, accompanied by paraplegia. He tells us that feeble vision is not uncommon in cases of paraplegia, probably as a result of eccentric

irritation, and he thinks it not improbable that there is a correlation between the cerebellum or spinal cord and the retina. However that may be, in only three cases was there any disturbance of the vision, and in all of these the ophthalmoscope showed neuritis or neuro-retinitis to be present.

But aside from any destructive alterations of nutrition, Pott's disease does exert an influence upon the circulation of the optic disk and retina plainly visible with the ophthalmoscope. The changes produced, though not pointing to any strictly pathological condition in the nerve or retina, must still be traced back to a pathological cause somewhere, and this, I think, is the spinal lesion. They consist in a change of calibre of the branches of the central vein, and occasionally in those of the central artery, but especially in the small capillaries, the nutrient vessels of the papilla; and this is the interesting feature of the subject. This change of calibre is almost invariably an increase; only once or twice have I seen a diminution in the calibre of these vessels. The increase in size is a passive one, and is not accompanied by any pulsation. The branches of the central vein become large and tortuous, have an engorged appearance which in some cases is very marked, and the minute nutrient vessels of the nerve, many of which are capillaries, increase in number and size, so as not only to become visible, but also impart to the optic disk sometimes a bright red color, and at other times a deep, dark red hue, so that it stands out most markedly from the rest of the fundus of the eye. As observed before, the occurrence of pulsation is exceptional. To account for this change in the circulation is a difficult matter, and in attempting to explain it, we must confine ourselves to two theories, both of which are perhaps beyond the limits of possible confirmation. These theories I have termed the theory by vascular anastomosis and the theory by nerve influence.

The theory of the indirect action of the spinal circulation upon the circulation of the optic nerve, of course depends upon intra-cranial anastomoses between the branches of the internal carotid and vertebral. The venous circulation of the spinal column is a somewhat complicated one. In a disease of the spinal cord and its membranes, as well as of the vertebral column, such as is present in Pott's disease, the circulation, particularly in the veins, is no doubt materially affected. There are three sets of veins in the spinal column: 1, the extra-rachidian, divided into anterior and posterior; 2, the intra-rachidian, likewise divided into anterior and posterior; 3, the veins of the spinal medulla and its membranes. All of these vessels must undergo some modification at the point of lesion, and, perhaps, for some distance above and below the lesion. The long anterior and posterior rachidian veins we may leave out of the question, as they empty either into the vena cava inferior or superior. The long anterior intra-rachidian veins extend throughout the whole length of the canal, and may be compared to the sinuses of the cranial cavity. The posterior

long intra-rachidian veins, two in number, extend from the first dorsal vertebra to the first or second lumbar, between the dura-mater and the posterior ligament, and anastomose freely with each other. They give off a multitude of small branches to the spinal meninges and cord, which form the third system of veins. Upon the posterior surface of the spinal cord, from the foramen magnum to the end of the canal in the sacrum, there exists a very large and intricate venous plexus, which is formed by the anastomoses between the long anterior and posterior intra rachidian veins, which is most complex in the cervical region. All these veins within the spinal canal, beside their connection with the two venæ cavæ, through the medium of the extra-rachidian veins, empty into one or two main channels, either the lateral sinuses or the venous trunks of the basilar groove of the occiput. Through the sinuses or trunks they communicate indirectly with the blood coming from the eye and orbit, by means of the cavernous sinuses. Most of the blood coming from the orbit and eyeball flows into the ophthalmic vein, and thence into the cavernous sinus.

Let us now consider the arterial circulation of the cord. The spinal cord draws a large part of its blood supply from the vertebral arteries. These arteries are the source of all the nutrient vessels of the medulla. At the superior border of the protuberance the basilar bifurcates to form the two posterior cerebral arteries, which anastomose with the terminal branches of the anterior cerebral, given off by the internal carotid, as well as with the posterior communicating. Before the vertebrals terminate in the basilar artery, they give rise to the two inferior cerebellar, two posterior spinal, and the two small anterior spinal arteries, though the latter may arise from the inferior cerebellar arteries. The posterior spinal artery descends on the medulla, and divides into small branches, one on the outside, the other on the inside of the posterior roots of the spinal nerves, which extend to the extreme end of the cord, anastomosing with each other, with the branches of the opposite side, and with the anterior spinal arteries.

The anterior spinal arteries are larger than the posterior, descend on the anterior surface of the medulla as far as the foramen magnum, where they unite to form one trunk, which extends to the end of the spinal cord, and anastomoses with the posterior spinal arteries. The posterior spinal arteries also send branches to the inferior part of the pyramids, and the olivary bodies, which finally lose themselves in the crossed bundles of this region.

Now it is difficult to suspend completely the circulation of the medulla; and to do so, as has been proved by experiment, we must ligate both ends of the basilar, the cerebellar, and the posterior cerebral at their origin from the basilar. The nutrient arteries of the medulla are distributed in three ways: 1. Nerve-branches going to the roots of the cranial nerves, which emerge from the upper portion of the medulla; 2, median or nu-

clear arteries, going to the nuclei in the floor of the fourth ventricle; and, 3, branches to the olivary bodies, pyramids, and restiform bodies. Some of these small branches have no visible anastomoses, and may, perhaps, be regarded as the "terminal arteries" of Cohnheim; but others anastomose with branches coming from the anterior cerebral supply—that is, the internal carotid.

When we regard the eyeball and the optic nerve, we find that the ophthalmic artery, a branch of the internal carotid, supplies most of the blood to the orbit, and nearly all the blood necessary for the nutrition of the eyeball. The optic nerve and retina are nourished from two sources, or rather from the same source as the eyeball, but by two different channels. The ophthalmic artery gives off the *arteria centralis retinae*, or else the latter springs from the lachrymal, which is a branch of the ophthalmic, or from one of the ciliary arteries. It then perforates the sheath of the optic nerve at a varying distance behind the eyeball, but generally within the orbit, and runs along the centre of the nerve, giving off minute nutrient branches, and finally is distributed to the retina; this is one channel of blood supply. Most of the nutrient capillaries of the optic nerve, however, come from the anterior cerebral arteries and from the ciliary arteries, which are also branches of the internal carotid.

The vascular connection between the circulatory system of the sclera and choroid on the one hand, and that of the optic nerve on the other, is very intimate, and takes place in and between the two sheaths of the nerve. The labours of Leber and Wolfring have rendered this very clear to us, and have greatly facilitated the study of the pathology of these parts.

The short ciliary arteries perforate the sclera near the entrance of the optic nerve, send branches to the choroidal plexus, and also anastomose with each other immediately around the nerve, and form the well-known scleral vascular ring. This network of vessels sends branches to the interior of the optic nerve, which, by frequent division and anastomosis, form a dense network or mesh, which penetrates the nerve everywhere, and anastomoses freely with the branches of the central artery, thus uniting the two circulations. Branches from the scleral vascular ring also run between the two sheaths of the nerve, and form a rich network of vessels all round the nerve; and as these branches extend further away from the lamina cribrosa, they anastomose with intervaginal vessels of small size, coming from the cerebral circulation. Some of these cerebral vessels also run along between the sheaths of the nerve as far as the sclera, and there assist in forming the scleral vascular ring.

Thus it is seen that the vascular supply of the optic nerve and retina is so entirely dependent upon the cerebral circulation, that it would seem impossible that any great disturbance in the latter could exist without its reacting upon the former, and giving rise to changes which might be

detected by the ophthalmoscope. Admitting this for a moment for the sake of argument, we also find that the vascular connection between the medulla oblongata and the inferior and posterior portion of the brain is very close, and also that the nutrition of the spinal cord is very closely connected with the nutrition of the medulla. Carrying our argument still further, it might be said that any lesion of the cord, particularly in its upper portion, would so react upon the circulation above as to cause disturbances in the cerebral circulation, which might extend forwards to the optic nerves and give rise to a visible hyperæmia of the optic disk. But the truth is that many pathological processes go on in the brain, without ever giving rise to any intraocular manifestations. How often do we see cases of grave cerebral disease, even cases of extensive hemorrhage, without a trace of any lesion discoverable by the ophthalmoscope. The attempt to account for the hyperæmia of the optic nerves seen in Pott's disease, by extension from the inflamed tissue through the cerebral circulation, is futile, and we must endeavour to find some other way out of our difficulty.

In seeking for an explanation of the alterations in the circulation and nutrition of the optic nerve, the condition of the pupils in these cases is brought to mind, and the question naturally arises whether there may not be a nervous origin for the hyperæmia as well as for the dilatation and sluggishness of the pupils.

The condition of the pupil, I am convinced, is due to a nervous influence, proceeding as well from the spinal cord as from the *third* pair of cranial nerves. In Pott's disease, provided the lesion of the spinal cord is situated in the cervical or upper and middle dorsal regions, the pupils are almost always found moderately and symmetrically dilated, and very sluggish. We know that the sphincter muscle of the iris is supplied by nerve filaments coming from the ophthalmic ganglion, and that these filaments derive their motor power from the *third* nerve. Though it is true that division of the *third* nerve affects the movements of the iris, it is a question whether this is the result of direct influence, or of an influence exerted primarily on the ophthalmic ganglion. Dr. Flint suggests that it is perhaps the same as the general effect on the sympathetic ganglia following destruction of their branches of communication with the motor nerves. When the *third* nerve is divided or paralyzed, the pupil becomes permanently dilated and almost immovable; that is, the iris only responds to the direct action of light upon the muscular fibres, and this is very slow. The same result follows division of the optic nerve, but when the *third* nerve has been divided, no change in the pupil occurs on irritating the optic nerve. The reflex action of the sphincter muscle, under the stimulus of light, operates through the *third* nerve, and of course cannot occur after its division. This reflex contraction is not instantaneous, and it is therefore rather characteristic of the sympathetic system. Bernard found

that the pupil was not immediately dilated after division of the *third* nerve, and that though the reflex contraction from the effect of light on the muscular fibres was slow, it could be still further dilated by atropia, and could be made to contract by operating on other nerves. Division of the sympathetic in the neck produced permanent contraction of the pupil, even after paralysis of the *third* nerve, and irritation of the superior cut end caused dilatation of the pupil. These experiments show not only that the action of the sympathetic on the iris is antagonistic to that of the oculo-motorius, but also that the latter nerve is not the only road for the transmission of reflex influences. Bernard has also found that galvanization of the *third* nerve did not produce contraction of the pupil, but this occurred when he galvanized the ciliary nerves coming from the ophthalmic ganglion. He concluded that when contraction occurs, it probably depends on irritation of the ciliary nerves or of the ophthalmic branch of the *fifth* nerve, and not of the *third* nerve.

According to Donders, there seem to be two distinct nerve-centres corresponding to two sets of nerves which regulate the movements of the iris. One of these centres presides over reflex contractions, and the other over those movements which influence the dilatation of the pupil. The former is situated in the tubercula quadrigemina, for it is known that the iris loses its mobility after destruction of these bodies.

Donders's experiments seem to show that the filaments from the sympathetic, which act on the iris, join the *fifth* nerve, and when this nerve is divided, communication between it and the radiating muscular fibres of the iris is cut off. Experiments also show that contraction of the pupil follows division of the *fifth* nerve, even when the *third* nerve has been divided; hence the influence of the *fifth* is direct. Now the filaments of the sympathetic which act on the fibres of the iris, arise from the spinal cord. The inferior cilio-spinal centre, according to some authorities, is situated in the cord, between the *sixth* cervical and *second* thoracic nerve. When the spinal cord is irritated in this region, both pupils *dilate*. If the cord is divided longitudinally, and the two halves are separated by a glass plate, irritation of the right half causes dilatation of the right pupil. This does not occur when the sympathetic is divided in the neck.

Brown-Séquard, however, assigns a much wider extent to the cilio-spinal region; for he found that section of the lateral half of the spinal cord at the level of the *fifth*, *sixth*, and even as low as the *tenth* or *eleventh* dorsal vertebra, affects the iris like a section of the sympathetic.

Chanveau regards this cilio-spinal region as a reflex centre for the iris, and not as a centre exerting a direct influence. Now in Pott's disease, we have a slow chronic inflammation of the cord and its membranes which keeps up a constant irritation of the nerve fibres and cells, and is usually situated in just this cilio-spinal region. The condition of the pupils is undoubtedly due to this chronic irritation propagated from the cord,

through the sympathetic nerve to the ophthalmic ganglion, and thence to the iris. I have noticed that, when the cord regains its activity, and all signs of inflammation have subsided, the pupils regain their natural size and mobility. But it seems to me that the effect produced by the spinal lesion is of a double nature. The sympathetic filaments being irritated by the chronic lesion in the cord, there results a moderate dilatation of the pupil; but in addition we have to account for the subsequent sluggish contraction. The sphincter branch of the third nerve is not paralyzed, otherwise we should have wide dilatation. Reflex action must go on, for the optic nerve is not affected. I am inclined to believe that the same pathological condition in the cord exerts a benumbing influence on the motor nerve of the sphincter, probably in the ophthalmic ganglion, produces a partial paresis, and hence the contraction of the pupil is sluggish.

As regards the changes seen in the nutrition or vascularity of the optic nerve, I think the passive hyperæmia is of nervous origin, that is, the influence is propagated from the lesion in the spine through the vaso-motor and sympathetic nerves to the vessels in the optic nerve. We know that sympathetic filaments are distributed to the muscular coat of the vessels; they have been traced upon the internal carotid and its branches, and a very delicate filament from the ophthalmic ganglion has been followed along the central artery of the retina to the eye, in the canal in the centre of the optic nerve. The nerve filaments, which supply the branches of the internal carotid to their distribution, come from the superior cervical ganglion, and according to recent researches, these sympathetic fibres, at or near their termination, in the walls of the vessels as elsewhere, are connected with ganglion-cells. We know that irritation of the sympathetic nerve causes movements in non-striated muscles, and this is particularly well marked in the muscular coat of the bloodvessels. We also know that the sympathetic ganglia derive their motor power from the cerebro-spinal system. Division or irritation of the spinal cord is capable of influencing the vaso-motor system. Bernard discovered that, when the sympathetic was divided in the neck, not only the pupil contracted, but the vessels dilated, and this Brown-Séquard showed was due to paralysis of the muscular coat. He also showed that galvanization of the nerve in the neck caused contraction of the bloodvessels.

These vaso-motor nerves regulate the calibre of the vessels and therefore also the amount of blood flowing through them, and experiments prove that they are derived from the cerebro-spinal centres. Ludwig and Thiry found that division of the spinal cord in the cervical region caused dilatation of the bloodvessels. We know that a rather large number of vaso-motor elements, coming from different points in the cord, ascend as far as the tuber annulare, the cerebellum, and even to other parts of the encephalon, and that hence the medulla is not the sole source of the vaso-motor elements. May it not be probable, that, beside the sympathetic filaments

coming from the carotid plexus, other filaments coming from the cord and medulla may advance as far forward as the middle fossæ of the skull, and communicate either directly with the ophthalmic artery and its ocular branches, or indirectly by anastomosing with the carotid plexus?

However that may be, some influence is propagated from the central lesion in the cord along the vaso-motor nerves to the bloodvessels, which influence is apparently of the same nature as that exerted upon the sphincter muscle of the iris. It seems to be of a paretic nature, for the walls of the vessels dilate, showing the muscular coat to be paralyzed or at least paretic. The existence of the ascending vaso-motor filaments in the upper part of the cord seems to be proved by the occurrence of the vascular and pupillary phenomena, when the spinal lesion is situated above the cilio-spinal region, in the upper portion of the cervical part of the cord.

The cases which form the basis of this paper are thirty-eight in number, and were all examined by myself. They represent various stages and localities of the disease, and were all among children. In four of the cases there was well-marked neuritis of the optic nerve, with dilated and sluggish pupils. In two more there was anæmia of the optic disks, with contracted and sluggish pupils. In the remaining thirty-two cases, there was always intense hyperæmia or congestion of the optic disks, with dilated and sluggish pupils.

NEW YORK, February 15, 1875.

ART. V.—*The Anatomical, Pathological, and Surgical Uses of Chloral.*

By W. W. KEEN, M.D., Surgeon to St. Mary's Hospital, Philadelphia.

IN a paper published elsewhere,¹ I first called attention to the use of chloral hydrate for the preservation of subjects and of pathological specimens. It is now more than a year since that publication, and I give herewith the results of my further experiments and observations.

I. THE ANATOMICAL USE OF CHLORAL.—The fœtus which I injected Dec. 10, 1873, is still perfectly preserved. One arm was injected with a 5 gr. solution and varnished, the other with a 10 gr. solution and covered with rubber dissolved in benzole; one leg with a 20 gr. solution and inclosed in a bag of sand, the other leg with a 40 gr. solution and inclosed in a bag of sawdust; and the trunk and head by the umbilical cord, with an 80 gr. solution and no protection used. The subject was left in a room of average temperature during the winter of about 50°, and in summer of about 80° or more. The lips, tongue, nose, and fingers first dried, and

¹ Philada. Medical Times, March 21, 1874.

gradually all the body except the legs and the arm covered with rubber. So far as I could see, the varnish retarded evaporation but little. At this date (May 1st), nearly 17 months after the injection, both legs are somewhat dried and hard, but still would be in fair condition to dissect. The arm covered with rubber is nearly as good. One year after injection they were in excellent condition, and now need but a little soaking to render them perfectly satisfactory. The ordinary toilet pins with which the incisions were closed are still entirely free from corrosion.

During the summer of 1874, in my anatomical school, when putting up my winter's supply of subjects, as they were very scarce and my experiments with chloral were so recent, I was unwilling to risk any possible failure, and so I used the chloride of zinc as usual. The fœtus above alluded to was a sufficient test of the action of the hot weather, as well as a number of pathological specimens preserved in chloral solutions of varying strength. Some of the fresh subjects obtained in the winter, I injected with arsenic and others with chloral, so that I could make a comparison of all three on the tables at the same time. The main trouble with my first chloral subjects, as formerly noted, was that the muscular tissue was too soft. Thinking that this might be due to the maceration of the tissues in the amount of water used (15 to 20 pints), I diminished this to 6 or 8 pints, and the amount of chloral was in various experiments one-half, one-third, and one-quarter of a pound. So far as I could observe there was little if any difference in the results. Generally, therefore, I used about one-quarter of a pound of chloral to six pints of water, *i. e.* say 20 grs. to the ounce. In an unent subject this amount was sufficient as a rule to run out of the digital arteries, both of the fingers and toes; if not I threw in some more. In the summer I should be inclined to use about one-half pound to 6 or 8 pints. This mode of injecting them entirely obviated the flabby condition of the muscles before spoken of, and the favourite subjects in my anatomical school were those thus injected.

At my final lecture at the Philadelphia School of Anatomy (March 1, 1875),¹ I exhibited a subject which had then been injected for six weeks, and I can safely say that its appearance and advantages for dissection excited the admiration of all those who were present. Abstracting the bleeding, it was in every other respect as nearly as could be the counterpart of the living body. The advantages then which, I think, I can now fairly claim for chloral after a trial of a year and a half are as follows:—

1. *Strength of Solution and Cost.*—I have found generally that about one-fourth of a pound to about 6 or 8 pints of water is sufficient. In warmer weather I should use one-third or one-half of a pound. Enough should be thrown in to run out of the digital arteries, both of the fingers and toes. The best chloral costs \$2 a pound, but a damaged article (of a

¹ The History of the Philada. School of Anatomy and its Relations to Medical Teaching. J. B. Lippincott & Co.

brown colour), equally good in all respects for this purpose, can be had for about half the price. This would make the cost from 25 to 50 cents for each subject. It is therefore the cheapest preservative in use. I was at first inclined to use alcohol or glycerine with the chloral in order to prevent the softening of the tissues, but I have not found anything so satisfactory as the simple chloral, especially after diminishing the quantity of water as stated before. The experience of Dr. Longstreth quoted below confirms this.

2. *Condition of the Tissues.*—Instead of being blanched and hardened as after chloride of zinc and alcohol, a chloral subject possesses about the natural softness of the living body. The cuticle is firmly adherent and the pink colour of the entire skin has an exceedingly lifelike appearance. The colour of the muscles is the bright red seen in butchers' stalls. Nerves and arteries, and other tissues, are easily distinguished from their marked differences of colour. The blood, instead of being a dirty, pasty mass, is semi-fluid. The axilla, with its entangled nerves, bloodvessels, muscles, and glands, instead of being in the utmost confusion the moment the blood escapes from the first severed vein, has each tissue as easily distinguished as in life. The viscera, instead of being totally different from the living tissues in colour and consistence, are as nearly natural as can possibly be, and in many cases the vascularity is most readily studied even without injection. The fingers and toes, instead of being dry, hard, and unfit for dissection, are as soft and pliable as in life. With the tissues in such a condition far finer and more satisfactory dissections can be made than by the ordinary means. Moreover, the subjects do not become mouldy.

3. *Arterial injections* are much finer since they penetrate the smaller vessels, which are so constricted by alcohol or zinc as to be practically obliterated.

4. *Odour.*—I was particularly struck with its effects in my class (mainly of ladies), in Artistic Anatomy. In the winter of 1873-4, I used an arsenic subject, and many of the ladies were much nauseated, especially when I opened the belly. Even most medical men scarcely relish the very disagreeable intestinal odour in dissecting the abdomen, and it is exceedingly persistent on the hands. After a lecture on the viscera *in situ*, my hands never become free from odour for at least 24 hours, in spite of every possible means of cleansing. During the past winter, 1874-5, in my art class, I used a chloral subject, and not a single member of the class, however fastidious, complained of the odour, and those who had attended both courses called my attention to the difference, and asked me the reason. Opening the belly produced absolutely no smell, nor were my hands in the least offensive. I have not found the least odour, whether of chloral or of the subject, even when a number were in the rooms at the same time. I have, therefore, not followed out my suggestion of adding the fragrant essential oils, as I did not deem it necessary. My friends and former pupils,

Drs. John H. and Joseph N. Dickson, of Pittsburg, have tried the oils of citronelle and gaultheria, *aa* f3iv-v, to each subject in their own private dissecting rooms, and the only odours perceptible are those of the perfumes. Dissection is thus reduced to a fine art.

5. *Instruments and Clothing*.—There is no corrosive action with chloral, and knives retain their edge for a far longer time than with zinc. After many months even the toilet pins in the subject have not been corroded. The clothing, too, is not destroyed by it.

6. *Maggots and Insects*.—With one or two exceptions in cut subjects, I have not found any maggots in the chloral subjects. Where the arteries are plugged by a clot of blood, and the injection is imperfect, maggots will appear in any subject. But I have found no more trouble in this respect with chloral than with any other agent. In permanent preparations I have had but a short experience thus far; but I have not yet found a single insect or bug of any kind attack any of my subjects or preparations, though exposed as usual. Some of the preparations injected with zinc or arsenic, and kept in the same cases, have been attacked and nearly destroyed.

7. *Permanent preparations* are prepared with the usual facility. I have found that they dried readily, did not crumble to pieces, as I feared they would, from the experiments of Personne, and were not affected by heat, by moisture, or by insects.

8. *Winter Supply*.—Were I to continue my anatomical school next winter, I should procure my subjects as usual this summer, inject them with chloral, and pack them in tanks, covering them only with damp sawdust. Possibly a very little carbolic acid might be of service in the sawdust, but I doubt it. If they were cut subjects a cloth should be put over the trunk to keep the sawdust out. When the sawdust dried, a little water might be added. The experiments with pathological specimens show that no mould would accumulate on the subjects. One great advantage would be that the cuticle would not be macerated and separated, thus allowing the subject to dry in so short a time after being put upon the table for dissection. The toes and fingers also do not dry and harden as by the present method. Even with zinc subjects I believe this method would be far preferable to the present mode of putting them up in salt and water.

9. *Microscopical Examinations*.—The remarkable preservative powers of chloral (see below, "Pathological Uses") suggest at once an important use which may be of the greatest convenience to teachers of anatomy and microscopy and preceptors who wish to show the tissues, viscera, etc., to their office students. It is not always convenient to obtain fresh specimens of the liver, glands, intestines, stomach, bladder, etc., for teaching purposes. I hope that in chloral we may find an easy remedy. Small animals, such as kittens, rabbits, guinea-pigs, frogs, mice, etc., may be

injected with a 20-grain solution, and placed in a bottle to prevent evaporation. They will then be ready at any moment for such purposes. Wet specimens of a similar character can also be kept in ordinary jars, corked, or covered with rubber or oiled cloth.

10. *Post-mortem Examinations.*—In a similar manner chloral would preserve any tumours or other pathological specimens in such a state that, when found in the dissecting room, even though unsuspected during life, they could be examined with the greatest exactness. Nearly all of such specimens are now lost, and the use of chloral would be a great gain to our museums. Moreover, as suggested to me by my friend, Dr. H. Lenox Hodge, the Demonstrator at the University of Pennsylvania, it would remove the objections heretofore existing to the injection of subjects at almshouses and hospitals *before* the *post-mortem* examinations. By doing this in warm weather, many a subject would be preserved which is now lost by being kept one or two days too long, and it would entirely avoid the imperfect and laborious injections necessary in “cut” subjects, where I have often had to search for and then inject each carotid, each subclavian, and each iliac, and pour the fluid *ad libitum* into the chest and abdomen.

11. *Embalming.*—The perfect preservation of the body, and especially of the lifelike appearance externally, in the pinkish colour of the skin and features, and the absence of blanching, shrivelling, and hardening, suggest at once that for the purpose of embalming the dead nothing more could possibly be desired. No one who has seen a chloral subject will doubt for a moment its complete superiority for this purpose, whether as to preservation, lifelike appearance, ease of performance, or cost.

The above conclusions are sustained by most of those who have tried it, and with whom I have corresponded. Among them I may name especially Frances E. White, M.D., the Demonstrator at the Woman's Medical College in this city, and the Doctors Dickson before alluded to. Dr. White has used $\frac{3}{4}$ lb. chloral, one pint of alcohol, and five pints of water, “and has been entirely satisfied with the results. There is no unpleasant odour, the muscles retain their natural colour, the plaster injections are far more complete than when zinc chloride is used, and the tissues more natural, though the brain is a little less firm. We have used, beside, zinc chloride, arsenic, carbolic acid, a combination of salt and saltpetre, etc., and I find the chloral preferable to either of them.” The Drs. Dickson have given it a thorough trial ever since April, 1874. They have generally used it 10 grs. to the ounce of water, but have lately used chloral and sulphite of soda each gr. x ad $\text{f}\overline{3}\text{j}$, a mixture which they like even better.

II. *PATHOLOGICAL USES.*—Its power to preserve specimens, whether solid or fluid, was tested by the following means: Pus from an acute abscess preserved since March 4, 1874, partly with 5 grs. of chloral to the ounce, and partly 20 grs., was examined October 2, 1874, that is, seven months after the addition of the chloral. The nuclei were well developed

by acetic acid, and readily stained by aniline. On April 20, 1875, after a lapse of over 13 months, the nuclei were still visible, but not so clearly as before. They were rather more granular in their character than at first. The dead bacteria observed March 10, 1874, were also distinctly seen.

Mutton which had been placed respectively in 5, 10, 20, and 60 grain solutions on October 22, 1873, was examined carefully at intervals without much change being observed. April 20, 1875, 18 months after being placed in the solution, it was examined again with care. The piece in the 5 gr. solution showed the transverse striation well, but had undergone some granular change. The other pieces were perfectly well preserved, all the microscopic appearances being normal, and the reactions of the muscular, connective, and elastic tissues to acetic acid and staining being as sharply defined in all respects as in fresh tissues of the same character.

The following specimens of urine, to which a pinch or two of chloral (crystals) had been added, were also examined on April 20, 1875. Each specimen had been examined and labelled with the nature of the deposit, etc., and date when first obtained.

1. Specimen obtained March 21, 1874, containing spermatozoids, mucous corpuscles, oxalate of lime, epithelium, and bacteria. April 20, 1875 (13 months), the mucous corpuscles were not seen; all the others were perfectly preserved.

2. October 19, 1874, uric acid, oxalate of lime. April 20, 1875 (6 months), perfect.

3. February 5, 1875, albumen, tube casts, epithelium, mucous corpuscles, uric acid. April 20, 1875 ($2\frac{1}{2}$ months), albumen, as before, coagulable by heat and nitric acid, whether alone or together, and the other elements perfectly preserved.

4. September 4, 1874, albumen, tube casts, mucous corpuscles. April 20, 1875 (7 months), albumen perfect in its reactions, casts obscured by an apparently large increase in the number of mucous corpuscles. It was impossible to remember how many of these there were originally, but it was evident that they did not obscure the other deposits before, and they do now. It may have been possibly only the aggregation due to the prolonged settling of the sediment. On the addition of acetic acid the nuclei could not have been better developed had it been a perfectly fresh specimen.

The condyloma placed in a 40 gr. solution December 25, 1873, after 16 months, is still in a perfect state of preservation. A 6 weeks' fœtus placed in a 40 gr. solution March 10, 1874, is, after 13 months, perfectly preserved. Kidneys, hearts, and numerous other similar wet preparations placed, during last summer and fall, in 20, 30, and 40 gr. solutions, have all kept perfectly.

The Drs. Dickson write me that they have been using nothing else in their pathological museum at Mercy Hospital, Pittsburg, since April, 1874.

They use it generally gr. viij ad f℥j, and in every case it has answered admirably except in two specimens, one a very fatty breast removed for cancer, and one fatty tumour. In these there has gathered a crystalline pellicle on the surface which, on shaking, falls to the bottom, where it has accumulated to some extent. The liquid is clear, and the specimens perfectly well preserved. No other persons have met with this trouble, and I suspect it to be due to the weakness of the solution used. They kindly sent me some of the material, and it proves to be mainly spores of torula.

Dr. Wm. Macpherson (*Phila. Med. Times*, Oct. 3, 1874) suggested the use of chloral to preserve solutions of morphia, atropia, strychnia, etc., from change while keeping them for use hypodermically. I can verify the fact after keeping one bottle of morphia (gr. xvj morphia, gr. v chloral, ad f℥j water) for over four months, that it is perfectly colourless, without any fungous growth in it, as painless and as efficacious as usual. He has also used it satisfactorily to preserve pus, sputa, urine, the fluid of hydrocele, and various tumours and other specimens unchanged for months.

Dr. J. G. Richardson has used the 20 gr. solution for months with both fluid and solid specimens, and has found it to answer admirably in the preservation of specimens for microscopical examination.

Dr. Morris Longstreth, who has tried it now for a year at the Pathological Museum of the Pennsylvania Hospital (of which he is the Curator), gives me the following as the results of his experience :—

“It has seemed to me more effective than any preservative fluid, barring alcohol, and the only objection to its use is this—that the specimens, if exposed to the air any length of time after being immersed in it, become dry and hard.

“I prepared a number of solutions, beginning with pure chloral, and ranging up, with varying proportions of chloral and alcohol, to pure alcohol, and placed specimens in each. The results were all perfect so far as their preservation was concerned, and equal; but I find now, after a lapse of six months, that the final result is least satisfactory in those specimens which were in the mixture of chloral and alcohol. Their solution became of dark colour and had more odour.

“Another very thorough test of the preservative qualities of chloral solution was this: I took a large jar holding five gallons—indeed, it served me as a ‘pathological slop-jar’—and into it were thrown various specimens from almost all the organs of the body, many of them in a decomposing state, together with small portions of refuse chloral solution, the general washings of specimens, sufficient to cover the mass. I intended to throw the whole away; but it was overlooked and allowed to remain, some of it at least since April, 1874, in the warm room of the museum, and having for covering only a piece of cotton cloth. I find now that there has been no further decomposition, and that there is no more smell about it than is inseparable from any specimen mounted in chloral solution, and above all, no growth of mould on the surface—a phenomenon of so constant occurrence with all other preservative fluids, even alcohol, under some circumstances—and a phenomenon which we know to be so indicative of the destruction of specimens.

“On more careful examination of the contents of my ‘slop-jar’ I found that the least well-preserved articles were those of brain-tissue, and yet these, underneath the soft, slimy, white coating that had formed on their surface—its occurrence in a mounted specimen would render the solution turbid, and this sometimes happens even in an alcohol preparation—were quite well hardened, and looked of more natural colour than if immersed in alcohol.

"My examination with the microscope of these specimens has not been complete, but those which I have tested have shown their normal appearances quite well.

"The only solution I use for preserving specimens freshly removed from the body is chloral—fifteen grains to the ounce of water. I have already used this for mounting specimens permanently, except for such as were too valuable to risk as yet in anything but alcohol, and I intend continuing its use for all specimens until I can arrive at some positive conclusion of its value."

In reporting such further experiments as I made myself, or obtained from others, candor requires that failures be reported as well as successes. I sent a copy of my first paper to Prof. A. E. Verrill, of Yale College, with the request that he would test its effects upon the invertebrates, a subject, I was aware, he was investigating with care. How to account for his results I do not know. It would seem that an agent which preserved spermatozooids and epithelial cells for many months, ought to preserve the invertebrates, but it certainly did not. Since receiving his letter I have had some oysters and clams in a 20 gr. solution, and thus far they have kept perfectly. In time, however, they may dissolve. He writes me, under date of March 26, 1875, as follows :—

"I made numerous experiments with hydrochloral last summer, but with very unsatisfactory results so far as invertebrates are concerned. I used it in solutions of various strength, from 3 per cent. or less up to about 20 per cent., but in every instance it failed to prevent the gradual dissolution of the specimens, though, if the solution was of considerable strength, no disagreeable odour would be generated, although the specimens (in case of mollusks, actinæ, etc.) might finally go into complete solution, or be reduced to a homogeneous jelly. In fact, I have satisfied myself that hydrochloral solution has a *direct solvent or caustic effect* on invertebrates, not unlike caustic potash or acetic acid, though less powerful, of course. We did, however, use it *for this purpose* in cleaning up small specimens for the microscope, and to render them more transparent. But the principal use that we put it to was in killing certain kinds of annelids, nemerteans, etc., in an extended condition. It does not have this effect *always*, but only on particular specimens, so that each species has to be tried specially. To some animals it is quickly fatal, even in very dilute solutions, but the larvæ of an eristalis (living naturally in filthy brackish or salt mud and water) lived in a saturated solution for eleven hours. These same larvæ, however, lived equally long, or longer, in various other highly poisonous solutions, and an hour and a half in strong solution of caustic potash.

"P. S. So far as I have used it for injecting vertebrates for dissection, it has worked very well, as you state, but my experiments in preserving vertebrate specimens in the solution are too incomplete to notice at present."

The experiments detailed above would seem sufficient to establish with tolerable certainty the place which chloral may hold. I think I may in all fairness state the following as its advantages and disadvantages :—

1. *Preservation.*—It seems to preserve all specimens, both solid and fluid (except, probably, invertebrates), with their general characteristic appearance, texture, and consistence. To this we must add that, except that the water gradually decolorizes them, the colour is for a time better kept than with any other agent. Hence, for temporary preservation of specimens for exhibition at medical societies, it is preferable to any other agent. For permanent preparations, as far as tested (say fifteen to eighteen

months), it has answered better than other preservatives. To this a partial exception must be possibly made in very fatty specimens, though further experience may show this to be wrong. I know of no other agent which will preserve *fluid* and semifluid specimens such as I have named, of normal colour and reactions with their delicate morphological elements intact, to anything like the same extent as chloral.

2. *Cost.*—The expense is vastly less. Alcohol costs now about \$3 per gallon, and if it be used of even 50 per cent., the cost per gallon is \$1.50. A gallon of a solution of chloral gr. xv ad f̄j will cost 66 cents, and if the damaged chloral be used (and Dr. Longstreth has used nothing else), the cost is but 33 cents. The jars also need not be hermetically sealed. Hence, ordinary jars closed by a stopper, a cork, or even covered only with rubber cloth, or some such means, will answer perfectly well, and the labor and cost of sealing be avoided. Any evaporation of the water only makes the solution stronger, and an annual inspection of the Museum and the addition of the water lost in a few specimens is a slight trouble and no expense. Any turbid sediment which often collects in alcoholic specimens and also to some extent in chloral, can be at the same time removed.

3. *Accessibility.*—The specimens are thus perfectly accessible at all times. Often when examining a special point, much could be settled by the handling of a specimen. The eye and the microscope could be employed at any time, but as our specimens are now mounted, the eye is often deceived by the distortion of the round jar, the fluid acting like a lens, and the microscopic examination is out of the question. No teacher can use to any good purpose a permanent preparation as at present prepared. Could the specimens be taken out, shown to the students, and replaced without trouble, the usefulness of our museums would be increased ten-fold.

4. *Preservation of Pus, Urine, and other Fluids.*—For purposes of study for some days, or for preservation indefinitely so that these fluids may be used with students at any moment, chloral offers great advantages. No other agent I think can replace it. It should be added in crystals and not in solution as that would change the specific gravity of the fluid and so possibly react on the morphological elements. I generally add a pinch or two to a 4 oz. bottle without being very exact as to measurement. I judge it to be about gr. x ad f̄j. The advantages especially in the urine are very great. It is not always convenient to examine a specimen at the moment of its reception. In summer the specimens will spoil very quickly, and in case of absence it may be most convenient to defer the examination a few days. Or, again, a patient after having been under treatment for a time may go away for a summer trip, or may desire to return to a distant home, and yet we may wish to keep the urine under observation. In summer the specimens will spoil if sent by express to any distance, but the experiments detailed above demonstrate, that, if chloral be added to it, weeks

and months may elapse before any change occurs, and the kidneys may therefore be watched, no matter at what distance the patient may be. In order to determine the question whether it might not interfere with the chemical examinations requisite in such a case, I requested Dr. Henry Leffman to experiment upon such specimens and determine the facts. It will be seen by his report that either the pure or impure chloral may be used, and that with the exception of the urea and sugar it does not interfere with the ordinary urinary tests. I wish especially to call attention to the fact that chloral cannot be used in saccharine urine, for by an error I have stated that it could be so used, in a note printed in the appendix to Dr. Tyson's book on urinary analysis. Dr. Henry Leffman writes as follows, under date of April 23, 1875 :—

“At your request I have made experiments to determine the deportment of solutions of chloral when submitted to the various tests employed for the examination of urine.

“1. Solution of chloral is neutral to test paper. As, however, it is sensitive to the action of alkalies, it might be possible that the long-continued action of a strongly alkaline urine would give rise to chemical changes by which a portion of the alkalinity would be neutralized and a portion of the chloral destroyed.

“2. Solution of chloral gives no precipitate upon boiling nor upon the addition of nitric acid.

“3. When caustic alkali is added to chloral the liquid becomes immediately milky, a result which is without doubt due to the liberation of chloroform and its forming an emulsion with the water. The cloud, as might be expected, disappears on boiling.

“4. A mixture of caustic alkali and chloral reduces the subnitrate of bismuth exactly as does sugar. It also so reduces oxide of copper. Boettger's and Trommer's tests cannot therefore be applied to a solution containing chloral. I have no hesitation in saying that the reducing agent in these cases is the alkaline formate produced when caustic alkali acts upon chloral.

“5. Solutions even of unrefined chloral give no precipitate with nitrate of silver, nor does the presence of chloral interfere with precipitation of chlorides in the urine by the silver solution.

“6. Solution of phosphates prepared in such a way as to precipitate on boiling does not have its properties changed by the addition of chloral.

“7. Urine containing excess of urates, after the addition of chloral, retains its property of becoming clear on heating.

“8. I do not think that the process for estimating urea by means of nitrate of mercury solution could be safely employed in the presence of an appreciable amount of chloral. While this substance in pure solution is without action upon nitrate of mercury, and does interfere with precipitation of urea, yet, since there is always a preliminary treatment of the urine with caustic baryta which renders it alkaline, we have the liability of the chloral to change into formic acid, which exerts a powerful reducing action, and would thus consume a portion of nitrate of mercury which would be recorded as urea.”

III. SURGICAL USES.—In connection with the urine, a subject which has just been considered, I desire also to call attention to an important surgical and medical use of chloral. In many cases after operations, in paraplegia, incontinence, etc., the urine has to be collected in a cup or other vessel, and in spite of every possible care, even in private practice, the vessel soon smells, and the urinary odour, especially in summer, is often very offensive, as well as deleterious to the health. In several cases

I have tried the plan of putting a few grains of chloral into the vessel whenever emptied and replaced. From that moment, the room and even the bed, bedding, and vessel were absolutely freed from all odour whatsoever. It would prove also, I think, a very valuable agent for injection into the bladder in cases of retention or inflammation, etc., in which there is any decomposition of the urine.

I have tried it as a disinfectant in cases of offensive ulcers, abscesses, cancer of the womb, caries, ozæna, etc., and I like it better than any other I have tried. It has the advantage over carbolic acid of having very little smell, and over the permanganate that it does not stain the bedding, clothing, etc. As a dressing to ulcers, it acts as a stimulant to the granulations, destroys fœtor, diminishes the discharge and makes it healthy, and so will often change an unhealthy into a healthy sore. For both these purposes I use it generally about gr. v-xv ad f 3j.

In erysipelas I have tried it twice as a dressing, and it succeeded well. As an injection into sinuses in strumous abscess, in caries, and other similar cases, the Drs. Dickson write of it in high terms, and I can confirm their observations from my own experience, after numerous trials. They also have tried it as an ointment (5ss ad f 3j) with success, and as an injection in gonorrhœa (gr. xx ad f 3j) when the discharge has generally ceased after three days or thereabouts.

In conclusion, I desire to guard against the impression that I wish to exaggerate the advantages of chloral. I have stated facts rather than inferences. Where it has failed I have candidly stated it. Where it has been but partially successful, I have not concealed it. I believe that in anatomy it surpasses every other preservative I have tried; in preserving pathological specimens, it is also the best means in use; and in surgery it adds another remedy of great value in the external treatment of many cases of disease.

ART. VI.—*Resection of Metatarsus, Anterior Tarsus, and parts of Astragalus and Os Calcis. Recovery, with useful Foot.* By P. S. CONNER, M.D., Professor of Anatomy and Clinical Surgery in the Medical College of Ohio, Surgeon to Cincinnati and Good Samaritan Hospitals. (With a wood-cut.)

P. S., German, labourer, æt. 33, admitted March 9, 1874. Seventeen days ago, while cutting ice, received an axe-stroke on dorsum of left foot, just above tarso-metatarsal articulation, severing tendons, dorsal artery, and accompanying nerve. On the fifth day symptoms of acute periostitis manifested themselves. Upon admission the foot was very much swollen,

pus was freely discharging from opening previously made, and examination with probe revealed denuded bone.¹

When the case came under my care (May 13, about eight weeks after the receipt of the injury) there were four openings upon the dorsum, pus in considerable quantity was being discharged, and there was evidently extensive disease of the tarsus. The man's general condition was bad, appetite poor, pulse 120. No record of temperature.

Either amputation or resection was a necessity. As the disease was apparently confined to the anterior tarsus, it was determined to remove the bones, and make an effort to save the foot.

On the 18th of May, the general condition of the patient being somewhat improved, the operation was made in the presence of several medical friends and the students in attendance upon the clinical course. The patient having been anæsthetized, and the Esmarch bandage applied, a curved incision was made, commencing just above the base of the second metatarsal bone, carried across the dorsum through the cicatrix of the original wound, and terminating on the outer border of the foot, somewhat posterior to the calcaneo-cuboid articulation.

The flap thus marked out having been dissected back, the bones of the anterior tarsus were removed, a portion of them being so softened as to be readily scooped out with the thumbs.

Upon the removal of these bones (*scaphoid*, *cuboid*, and *cuneiforms*) the anterior portion of the astragalus and os calcis was found diseased, and with the bone-forceps and osteotribe there were removed, perhaps, *one-fourth of the astragalus*, and *one-third of the os calcis*.

Examination of the metatarsal bones now showed that their bases were diseased, and the periosteum separated to nearly their phalangeal extremities. An incision was made from the primary cut forwards over the second metatarsal bone, and the *entire metatarsus* taken away, there being then left of the skeleton of the foot only the phalanges, three-fourths (perhaps four-fifths) of the astragalus, and about two-thirds of the os calcis.

Upon the removal of the Esmarch tubing considerable oozing of blood occurred, but no hemorrhage of any importance. Charpie, saturated with a weak solution of carbolic acid (5j-Oj) was packed into the cavity, a bandage of mosquito-netting applied, and the foot placed in a fracture-box, and surrounded with bran.

The after constitutional disturbances were of no great severity. At no time after the second day was the pulse above 120, or the temperature higher than $102\frac{1}{5}^{\circ}$ F., and but twice after the fifth day was the pulse above 100, or the temperature above $101\frac{2}{5}^{\circ}$ F. (These observations were made and recorded twice a day.) The progress of the case towards re-

¹ Abstract of report of case, Records of Cincinnati Hospital, 1874.

covery, though not very rapid, was uninterrupted, and when I went off duty (August 1) the wound was almost entirely cicatrized.

The patient remained in hospital until the 9th of October, when he was discharged "cured," being able to walk tolerably well with the aid of a cane, and having some motion at the ankle-joint.

On the 3d inst., ten and a half months after the operation, when the photograph was taken from which the accompanying wood-cut was made, the man could walk very readily without a cane, and could rest his entire weight upon the foot, and then raise the heel slightly from the ground. The motion of the ankle-joint was about one-half that of the corresponding joint of the opposite side (18° – 35°). The foot is, of course, much shortened, but affords an excel-



lent base of support; and as all the points of the "tripod" are preserved, and the ankle-joint is in good working order, the ordinary movements in walking are well performed.

An idea of size and shape may be formed from the following comparative measurements:—

	Left foot.	Right foot.
Across base of toes, plantar surface . . .	$3\frac{3}{8}$ inches	$3\frac{1}{2}$ inches.
Across heel, plantar surface . . .	$2\frac{5}{8}$ "	$2\frac{1}{2}$ "
Extreme length . . .	$6\frac{1}{2}$ "	$10\frac{1}{8}$ "
From external malleolus to end of little toe . . .	3 "	$6\frac{7}{8}$ "
From internal malleolus to end of great toe . . .	$4\frac{1}{4}$ "	8 "

Extensive disease of the tarsus is generally considered to demand either the middle-tarsal or tibio-tarsal amputation rather than resection. Even many surgeons, who, with Mr. Teale, advocate excision when the disease is in the posterior tarsus, agree with him in making the Chopart amputation when it is the anterior part of the foot that is affected. It is considered that either the disease cannot be completely removed—in other words, that it will afterwards extend to bones apparently healthy at the time of the resection—or that the foot left will be not only useless, but a positive incumbrance.

But experience has, we believe, clearly shown that complete removal of a diseased bone or bones of the tarsus, has time and again brought about

a perfect cure, and this too in cases of caries as well as of traumatic osteitis.

In many of the recorded cases in which a second or third operation has been made, the trouble (we may fairly conclude) was not so much in the disease itself as in the want of thoroughness in the primary resection, or in the leaving of a portion of a bone which had been subjected to the rough action of the bone-forceps or gouge.

That the second objection to extensive resections (the uselessness of the preserved foot) is not a valid one, we may consider as well established by the reports of cases which we will hereafter mention. My own case has convinced me that an operation such as was made, when successful, leaves the patient in decidedly better condition than an amputation, and, if unsuccessful, the foot can afterwards be removed.

As respects the method of operating, a dorsal flap may be turned up, as in the case I have reported, or by incisions made on the inner and outer borders of the foot, access to the bones may be secured. The latter is the method adopted by Watson, of Edinburgh; and Jaesche says that he would have employed it if he had known beforehand how much bone he would have to remove.

It has the advantage of saving the important structures of the dorsum, tendons, vessels, and nerves, but in a case in which I used it (a case resulting fatally from pyæmia on the 12th day), I found the removal of the bones much more difficult than when they were fully exposed by the curved incision across the dorsum.

In one of the earlier operations (Dunn's), the hemorrhage was profuse, but in no other case, so far as I have discovered, has it given rise to any special trouble. (In Liston's case in 1818 there was secondary hemorrhage from the anterior tibial which necessitated ligation of that vessel.)

By the use of the Esmarch bandage, bleeding during the removal of the bones may be prevented, and the extent of the disease quite satisfactorily determined.

The after-hemorrhage, which may be expected to be more abundant than if the "bloodless method" had not been employed, can, if necessary, be controlled by thorough stuffing of the cavity and the application of a bandage. In all cases care must be taken to prevent too early union of the edges of the incision, and consequent bagging of pus.

Watson declares that in the case in which he made a secondary amputation he was "chagrined to find that there was no condition which should not have admitted of sound cicatrization had the method of dressing the cavity of the wound been rigidly carried out."

It is very probable that proper attention to this matter of dressing would have secured a more favourable result in Jaesche's case, for, though the principal wound was almost healed, there was found post-mortem "a considerable quantity of pus in the deep part of the wound."

Respecting the condition of the parts some time after resection, but little can be said. "Complete recovery with useful foot" has been reported, but there have been as yet but few opportunities afforded for post-mortem examination. Holmes presented to the Pathological Society, May 15th, 1860, a specimen in which the gap left by the removal of the cuboid and external cuneiform was filled up by fibrous tissue which he believed would ultimately, had the individual lived, have undergone ossification; and Watson exhibited at the meeting of the Med.-Chir. Society of Edinburgh, July 15th, 1874, a foot in which "a fibro-osseous structure occupied the hiatus resulting from removal of the anterior tarsus."

The relative mortality of the two operations, amputation and resection, cannot as yet be determined with much accuracy.

It would appear from Hancock's statistics that the Chopart amputation may be expected to result fatally in about 3 per cent. of the cases in which it is made for disease, and in about 23 per cent. of those for accident (excluding gunshot?); and the ankle-joint amputations (Syme's and Pirogoff's) in about 6 per cent. of those for disease, and about 11 per cent. of those for accident.

Examination of the appended table shows that in the resections of the entire anterior tarsus the mortality was 20 per cent. (in two-thirds of these fatal cases the result is not fairly attributable to the operation), and in those of a considerable portion of the anterior tarsus 16.67 per cent. The cases reported, however, are too few to make statistics based upon them of much value.

It is not, of course, every case of disease of the tarsus that will admit of resection. The extent of the osseous lesion, the condition of the soft parts, the probable inability of the patient to survive the necessary confinement and considerable suppuration, one or all may decide the question in favour of amputation; but the decision should not be so made simply because there is a diseased condition of even the entire anterior tarsus.

As indicating how far conservatism can be carried in the surgery of this part of the foot, I present a tabulated statement of all the extensive resections (*i. e.* of not less than two bones), that I have been able to find recorded, not including, however, cases involving the ankle-joint unless a part at least of the anterior tarsus was taken away, nor those in which by cauterization and the use of the gouge, operators have so followed up progressive disease as ultimately to leave but little of the original skeleton of the foot. It will be seen that in the case I have reported a greater part of the foot was taken away than in any other included in the table. D'Armbruste's operation is omitted ("removal of *twenty-seven* (!) bones of greater or less size from the middle and outer portion of the tarsus, there remaining only those which were connected with the great toe"); either only necrosed pieces of bone were taken away, or the anatomy of the foot was as extraordinary as the result of the resection was marvellous.

No.	Operator.	Bones removed.	Result.	Authority.	Remarks
1	Hasse	Anterior tarsus	Recovery	Archives Générales, ser. 5, t. 4	Caries of 22 years' duration.
2	Dunn	Anterior tarsus, bases of 2d and 3d metatarsals and very small part of astragalus	Recovery. Ultimately $1\frac{1}{2}$ inch shortening	Med. Chir. Trans., 11, 337	Bones removed at two operations.
3	Champion	Anterior tarsus, bases of 3d, 4th, and 5th metatarsals	Caries reappeared in other bones before cicatrization took place	Blackman's Mott's Velpeau, 11, 453	
4	Moreau, Jr.	"Similar case"	"Similar case"	" "	
5	Bigelow, H. J.	Anterior tarsus, bases of 2d and 3d metatarsals	Death $5\frac{1}{2}$ months later	Hodges's Exc. of Joints	
6	Laugier	Anterior tarsus, bases of 2d, 3d, and 4th metatarsals	Death a month later from phthisis	Archives Générales, ser. 5, t. 4	"Examination of the uncicatrized foot showed that the ultimate result would doubtless have been satisfactory."
7	Bryant	Anterior tarsus	Recovery "Excellent foot"	"Surgery," p. 764	Boy aged 8.
8	Watson, P. H.	Anterior tarsus, bases of metatarsals	Recovery	Edin. Med. Journ., May, 1874.	
9	Watson, P. H.	" " "	"	" "	
10	Watson, P. H.	" " "	"	" "	
11	Watson, P. H.	" " "	"	" "	
12	Watson, P. H.	" " "	"	" "	
13	Watson, P. H.	" " "	Failure, subsequent amputation	" "	
14	Conner	Anterior tarsus, metatarsus, one-fifth of astragalus, one-third of os calcis	Recovery		Following injury.
15	Conner	Anterior tarsus, metatarsus (except part of 1st metatarsal)	Death from pyæmia on 12th day after 2d operation		Following injury.
16	Moreau, Sr.	Cuboid, 3d cuneiform, base of 4th metatarsal, adjoining surface of 5th metatarsal, and articular surface of os calcis with cuboid	Perfect cure	Moreau, Resection des os, p. 110	
17	Bryant	Cuboid and three cuneiforms	Recovery. "Excellent foot"	"Surgery," p. 958	
18	Kade	Cuboid, 2d and 3d cuneiforms, 4th and 5th metatarsals	Recovery	St. Petersburg Med. Zeit. 1864 Schmidt's Jahrbücher, 155 (1872), p. 212	Gunshot injury.
19	Kade	Scaphoid, 1st and 2d cuneiforms, greater part of 1st metatarsal	Death from pyæmia in 7th week	" "	Necrosis following contusion.
20	Jagaker	Scaphoid, two cuneiforms, head of astragalus	Recovery. "Sound and useful limb"	Med. Times and Gaz., Oct. 30, 1869	
21	Owens	Cuboid, middle and external cuneiforms	Recovery	Culbertson's tables	
22	Teale	Posterior tarsus and cuboid	"	Hancock Anat. & Surg., Foot, p. 84	
23	Teale	" " cuboid and scaphoid	"	Hancock Anat. & Surg., Foot, p. 86	
24	Mulvany.	Ankle joint, posterior tarsus and three-quarters of scaphoid	Complete recovery	London Lancet, Nov. 6, 1869	
25	Lehman	Posterior tarsus and scaphoid	Complete recovery	Deutsche Klinik, 1870	
26	Fayrer	Posterior tarsus and scaphoid	"In fair way to recover"	Med. Times and Gaz., July 31, 1869	
27	Liston (1818)	Ankle-joint, astragalus, scaphoid, and two cuneiforms	"Complete and lasting cure, without much deformity or lameness"	Edin. Med. Journ., Jan. 1821	

No.	Operator.	Bones removed.	Result.	Authority.	Remarks.
28	Liston (1832)	Scaphoid, two cuneiforms, and upper surface of astragalus	"Did not succeed"	Blackman's Mott's Velpeau, II. 483	
29	Skey	Necrosed portions of tarsus and parts of scaphoid and cuneiform	Recovery	London Lancet, Dec. 4, 1853	
30	Bradford	Small part of astragalus, os calcis, and cuboid	Excellent recovery	Gross' Syst Surg., II. 1094	
31	Humphrey	Ankle-joint, astragalus, and scaphoid	Failure	London Lancet, Aug. 6, 1864	Subsequent amputation.
32	Holmes	Astragalus and scaphoid	Recovery	London Lancet, May 27, 1865	
33	Langenbeck	Ankle-joint, astragalus, cuboid, part of os calcis	"	Jahresbericht für gesamt medicin, 1872, 2, 436 N. Y. Med. Rec. June 1, 1872	Gunshot injury.
34	Forster	Scaphoid, internal cuneiform, part of metatarsal	"	Guy's Hosp. Rep Ser. 3, XVII., 387	
35	Jaesche	All the tarsus except small portions of posterior surface of os calcis, base of 2d metatarsal	Death from pyæmia in 3d week	Langenbeck's Archives, 8 173 Bien, Retr. (Sydenham), 1867-8	

Resections of entire anterior tarsus	15
successful	9
unsuccessful	3
fatal	3
Resections of part of anterior tarsus	6
successful	5
fatal	1
Resections of entire posterior and part of anterior tarsus	5
successful	5
Resections of part of posterior tarsus and anterior tarsus	8
successful	6
unsuccessful	2
Resections of entire tarsus	1
fatal	1
Total	35
Whole number successful	25 (71.4 per ct.)
" " unsuccessful	5 (14.3 per ct.)
" " fatal	5 (14.3 per ct.)

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ART. VII.—*Anomalies in Cardiac Pathology.* By EDGAR HOLDEN, M.D., Ph.D., Newark, N. J., March, 1875. Read before the New Jersey Academy of Medicine.

THE discovery of the inhibitory or reflex function of nervous vitality has probably been the starting-point of more practical knowledge, and more varied research in cardiac pathology, than any since the memorable inves-

tigations of Harvey upon the circulation of the blood ; and it is interesting to note how the progressive development of knowledge has opened new and more intricate problems, until, to-day, the field of investigation seems just as wide as before.

The common experience that derangements of digestion, emotion, fatigue, and even changes of temperature, could materially affect the heart's rhythm, found ready solution in the distribution and anatomical connection of the pneumogastrics ; but physiologists soon brought the functions of these nerves within such narrow limits that it became evident that the mysterious supply of nervous vitality to the heart was not alone from these.

It is necessary to allude with brevity to the present state of our knowledge of this supply in order to render the remarks and cases which follow of practical interest.

A weak current of galvanism through the pneumogastrics will increase the frequency and diminish the force of the heart's pulsation ; a stronger current will arrest it ; and this, as has been demonstrated by Bernard, is due to direct transmission through the motor filaments.

Division of both pneumogastrics may and does simply diminish the force and increase the frequency of pulsation, and galvanization of each of the cut extremities at once exhibits the character of the usual supply as a direct current—the lower end responding by arrest of the heart's action, the upper giving no evidence of any reflected irritation through the brain or spinal cord.

Finally, the action of woorara upon these nerves in the hands of many physiologists, and the brilliant discoveries of Haller, and Schiff, and Erichsen, and others, regarding the part played by the blood in producing rhythmic contractions, together with the collateral discoveries dating back to Petit, through Dupay, and Reid, and Brachèt, and Brown-Séquard, concerning the true functions of the sympathetic, seem to establish that the whole function of the pneumogastrics, as regards the heart, is to regulate the force and frequency of the pulsations.

The second fact of importance in connection with our subject relates to the now established inherent irritability or contractility of the muscular structure of the heart itself, by which, as may be readily shown, the heart, isolated from all nerve connection, will continue to beat so long as the processes of nutrition maintain the integrity of the muscular tissue. This condition or property has been recently attributed to nervous ganglia discovered by Remak in the structure of the heart itself, but is more frequently believed to be a property common to all unstriped muscular fibre.

It is interesting here to note that, while this irritability is a sufficient cause of contraction, the circulation of blood in its cavities is a stimulating and direct cause of its regular pulsation.

The third fact necessary to our present purpose relates to the functions of the sympathetic.

There have been few of the essential qualities of the heart's rhythmic action, from that of the ascription of its irritability to the cardiac plexus by Brachet, in 1837, that have not been believed to be connected with this remarkable system of nerves; and it is to this variety of belief that the maze of uncertainty still existing may in some degree be due.

Certainly, so long as the difficulties that surround the isolation of individual plexuses remain, we shall be justified in maintaining our belief that no impairment of function, however erratic, may not be traced to it. The singular cases of intermittent or irregular pulse following a blow on the epigastrium, the vagaries of hysterical disturbance, the violent palpitations of the abdominal aorta without organic change, and even the abnormalities arising from constipation or deranged digestion, usually supposed to affect the heart through the vagi, may be cited as familiar.

In this connection I would call attention to the fact that the sphygmograph exhibits in a striking manner the disturbances of minor causes, and the possible derangement of cardiac action through the sympathetic. Thus, anger to such an extent as to flush the face, while not modifying at once the tension of the artery, exhibits in the shock wave of the tracing the increased irritability of the heart's muscular structure; while simple hysteria may vary the tension, the shock wave, and the wave of recoil. The action of the vagi under varying circumstances, upon the heart, is evidenced in the results of a full meal with and without wine, the former varying the tracing both as to amplitude, rhythm, and tension.

Smoking to faintness reduces the tension of the arteries to a minimum.

Violent exertion increases the volume of blood discharged at each systole, and the tension of the arterial system is correspondingly increased.

Inordinate dancing produces singular disturbance of *impletive* power and reduced vigour.

Yet it is not the ordinary phenomena of cardiac pathology, however curious, to which I desire to allude. The cases of syncope from tobacco, of palpitation from profound emotion; of pseudo-palpitation, where the diaphragm is alone at fault, and the heart is actually beating regularly; of idiosyncrasies, as in the cases alluded to by Walsh, where green tea invariably produced perversion of rhythm; of traumatic reflex angina pectoris; of local irritants, as in case of Dr. Nooth, occurring in his own person; (Walshe), where "asthmatic seizures and extremely irregular pulse were due to a bullet lodged in the bronchi." These, and a host of others, form a tempting and prolific field; but there are other and more erratic departures from ordinary experience, of equally practical interest.

The cases that form the basis of this paper are culled from notes of private practice; and, while some of them may represent classes, they

seem to be unique, and in some sense may be correctly styled anomalies of pathological condition.

There are three classes of cases of this character:—

1. Cardiac disease affecting only the sympathetic system.
2. Cerebro-spinal disorder, with cardiac and pulmonary symptoms only.
3. Cardiac disease with cerebral symptoms only.

In the summer of 1861 there was brought to the Flatbush Hospital on Long Island a young girl, seventeen years of age, who for three weeks had been suffering, apparently, from ordinary intermittent fever of the quotidian type. Up to the week of admission she had not been confined to bed, but the exhausting chills and violent fever had produced an unusual emaciation, and the hacking cough suggested the existence of acute tuberculosis. Ordinary treatment with quinia, arsenic, iron, and salicine, had produced no particle of amelioration. Examination showed no disease of the lungs whatever; the spleen and liver were not constantly or greatly engorged; the functions of the kidneys were normal, and the bowels were by turns constipated and relaxed. No pains other than that in the head, back, and limbs, common alike to the algid state of malarial fever and the irritative chill of phthisis or pyæmia, were complained of, and the intermission was as complete as that of the first named. The heart's action was habitually quick, but not more *rapid* than seemed accountable by the debility and prolonged illness. The thermometer was not then the valuable aid to diagnosis that it now is, and no suspicion had arisen in the mind of any of the medical gentlemen who saw the case of any cardiac disease. The periodical intermission gradually shortened, the fever became more intense, and the sweating more profuse and exhausting; and, without warning, the patient suddenly ceased to breathe one week after admission.

Autopsy revealed no apparent lesion of any organ, the lungs, liver, kidneys, and bowels being singularly sound; but, upon section of the heart, which was slightly larger than usual and of globular shape, the knife exposed an abscess in the walls of the left ventricle at the apex, containing of creamy, laudable pus two and one-half drachms. There was no purulent infiltration of the heart's structure, and no appearance of abscess in other parts of the body; and the pyohæmia, if such was the cause or result of the fatal illness, showed no other lesion. The pericardium was injected only over and opposite the seat of the abscess, and a few bands of lymph were found clinging to a circumscribed spot on the free surface.

Remarks.—Cases of this character are of extreme rarity, and even carditis as a primary affection, and which probably preceded the purulent accumulation in this case, is of very infrequent occurrence.

Nevertheless cases have been recorded upon good authority, and the testimony tends to indicate the almost impossibility of diagnosis before death.

Bouillaud refers to such condition, and even asserts that rupture of such an abscess may be productive of no serious consequence.

Walshe asserts that of such a condition no positive clinical signs are known, and that even general carditis has not fallen within his experience.

The point, however, designed to be obtained in this instance is to call attention to a pathological condition rarely distinguishable during life, even where connected with pyæmia or phlebitis, but here neither accompanied by nor dependent upon either of these affections, a true cardiac disease proving fatal without sign of cardiac injury, through the nervous exhaustion and consequent perversion of nutrition, by which it was accompanied.

We have as the essentials of this case a localized retrograde metamorphosis of tissue and a reflected implication of all vital processes apparently due to a persistent irritation; for, that this was really the condition that produced the chills and the fever and the sweating, seemed evident both from the absence of septic developments in other parts of the body, but chiefly from the fact, not above mentioned, that a true pyogenic membrane seemed to line the walls of the abscess and the actual inflammatory action that may have preceded the development of pus corpuscles had disappeared. If then irritation is the word to express the pathological state that finally exhausted the nervous system, how was this brought about?

If we call to mind the nervous structure and nerve supply of the heart, we shall see how such a termination must be the almost certain result, aside from any mechanical interference with function (a possibility which has not been overlooked) and why it may at the same time be justly termed an anomaly in cardiac pathology. As already stated, the heart possesses an inherent excitability due to the combined influences of its contained ganglia (Remak) and the properties of its unstriped muscular fibres. It is sensitive to its circulating blood and even to water in its cavities; yet it is insensible to outside influences, as it may be cut or handled with apparent impunity.

I have myself the full record of a case in which I passed the three fingers of my right hand into the pericardium, and examined the heart for an expected laceration, in a man now living. Quite recently there appeared, in the *Medical Record* of New York, a case in which a deer was killed which had carried a bullet in its heart for a year. I need not multiply instances to show an apparent immunity of the heart from injuries which we should from *a priori* reasoning consider impossible, and hasten to ask why the circumscribed lesion in the above case should have differed from others of a mechanical nature. Of course, any substance in the heart *may* be an efficient cause for the most severe derangement of the nervous system. Dr. C. H. Jones, in his *Vindematio* appended to his valuable work on nervous disorders, says (p. 578):—

“We should bear in mind the frequent occurrence of reflex inhibitory action implying the paralysis of cerebro-spinal or sympathetic nerves, as the result of a stimulus morbid in kind or degree, in relation to the centre on which it acts,” and further “that vaso-motor paresis seems to constitute an essential part of all febrile movement.”

The recurrent chill, the pyrexia, and the sweating, with final exhaustion, here find an explanation; but it seems to me that the probable duration

and gradual formation of the abscess might have generated tolerance, as intimated by Bonilland, but for the fact that the foreign substance in the heart was *pus*; for, call it what we will, whether identical with the white blood corpuscles, the living *amœba*, the protoplasm of organic life, it is yet *pus*, a most formidable foe to nervous vitality when thus segregated in a living tissue. That the encysted bullet should be innocuous, and the encysted abscess a persistent irritant, seems to warrant the term anomalous.

The *second* class of anomalies, or those of cerebro-spinal disorder with cardiac symptoms, may be illustrated by the following very interesting case, which will be given as briefly as possible.

Dr. —, a practising physician, age 34, came under observation in September, 1874, suffering from palpitation, cough, irregular pulse, and apparently well-marked hectic. There were thoracic pains confined to the right sub-clavicular and sub-scapular regions, considerable emaciation, great debility, and occasional diarrhœa.

There was no expectoration, and the illness dated back only two weeks. Quite naturally the doctor's prescriptions for himself had been based upon his belief that he was either the victim of phthisis florida or of some cardiac disease.

A careful physical examination revealed no impairment of either heart or lungs excepting only that a low pitched bronchial breathing and complete absence of vesicular murmur on the right side, without dulness or rales, at once called attention to the fact that the right thorax was fixed and immovable. This was moreover at once evident to the eye. The examination was continued, and rigidly, to ascertain the cause of so singular a condition. There was no fluid in the pleuritic cavity, nor evidence of any localized inflammation. The liver was engorged, but not especially tender; there was no evidence of any disease of other organs. The temperature was 100°, pulse irregular in rhythm, and varying from 95 to 120 beats per minute.

Whether the disease from which this patient was suffering was due to a reflected paresis of the long respiratory nerve of Bell (if such a condition is possible without graver complications) or whether primarily an affection of that or the sympathetic, certain it is, that upon the diagnosis of a nervous origin, he took quinia, nitro-muriatic acid, and strychnia, and within one week was able, as he has since assured me, to attend to his patients, and recovered flesh and strength with marvellous rapidity, the cardiac derangement being the first to abate.

The other case under this head was also that of a physician in active practice, and about forty-five years of age. When I was called to see him, he had been confined to house and bed more than a week, with all the usual symptoms of acute pericarditis. By the advice of the physicians who had been with him, and with his own concurrence, antiphlogistic and counter-irritant treatment had been in progress with no particle of amelioration. Debility was progressive. Faintness upon slight movement, coldness of extremities, flashes of heat, rapid and intermittent pulse, intense pain in the præcordia and beneath the left clavicle, were the most marked features.

Upon careful physical examination and measurement I could detect no evidence of effusion or of inflammation, either endocardial or pericardial,

and the sphygmograph verified the belief that the disease was not in the heart.

Inquiry developed the fact that for several weeks the doctor had been overworked, and had stimulated his flagging energies by large and repeated doses of quinia averaging twenty grains daily. Alcohol and strychnia produced immediate amelioration of all the distressing symptoms, and a rest of two weeks re-established his health.

Remarks.—Cases of the character of this latter class are not of infrequent occurrence, but it has been rare in my experience to find so positive evidences of organic disease in an organ which was perfectly sound. Of the former case, however, it may be observed that an apparent paralysis of one side of the thorax, without effusion or inflammation discoverable upon careful examination, is of far more infrequent occurrence.

It may be natural to assert that such a condition of effusion or inflammation did exist and was not detected, or at least that the impaired muscular power was simply a reflex phenomenon due to some localized irritant. Certain it is that the engorged liver, which, being without tenderness, was more likely to have been a result than a cause, was the only actually changed organ, and that remedies addressed to the nervous system relieved with marvellous celerity when others given upon other hypotheses had failed.

The *third* and last class of cases, viz., those of cardiac organic disease with only cerebral symptoms, may be illustrated in no more interesting way than by the following case, which was verified by autopsy.

Mrs. B., a widow, aged 38, living in a neighbouring town, had uniformly enjoyed good health and done her own housework, with no warning of cardiac derangement; was suddenly seized with headache, slight giddiness, and nausea, in the act of carrying a scuttle of coals. Without much complaint she lay down upon the bed, and in an hour was apparently as well as before. The next day, however, and daily thereafter at varying intervals, the same symptoms recurred, and gradually a state of semi-unconsciousness was reached which excited the first alarm on the part of her friends. In connection with the two physicians already in attendance I saw her at this stage. The temperature was 99.5° ; the pulse small, rapid, and wiry, and 140 per minute. It was impossible to arouse her to consciousness, but there was no coma, and the sleep, if so it may be called, was as natural as in health. The respiration was not hurried, the pupils were sensitive to light, and normal. Sensation and motion were intact, and in brief the condition was, with the single exception of the pulse, that of simple hysterical somnolence.

The character and not the mere rapidity of the pulse, however, excited suspicion; and examination of the heart showed an area of dulness of 7 inches transversely, by $7\frac{1}{2}$ in an oblique direction, the apex displaced to 3 inches outside and above the nipple, and the maximum of systolic impulse transferred to the base. No murmurs existed, but with the symptoms and the horizontal axis of the heart, the diagnosis was clearly hypertrophy with dilatation, and such the subsequent autopsy revealed. The singular somnolence soon became coma, and the patient died in that condition.

There was dilatation of the right, with concentric hypertrophy of the left heart.

Remarks.—One case only under this head need be presented, and I would simply call attention to the fact that the diagnosis was practically accidental; for no symptom referable to the heart had ever, so far as known to the patient's family, been complained of.

The cerebral symptoms are of course easily explained, and the hyperæmia due to the dilated condition of the right auricle is a more or less familiar circumstance, but the total absence of cardiac symptoms even up to the fatal termination, and the final prominence of cerebral symptoms, with so grave an organic lesion as indicated, constitute an anomaly not without practical bearing upon our daily experience.

The autopsy revealed no lesion of the brain, although a general hyperæmia of the tissues was observed.

ART. VIII.—*On the Nature and Duration of Yellow Fever, as shown by Graphic Temperature Charts of Typical Cases; with some remarks on the aid to diagnosis and prognosis, and indications for treatment, furnished by the clinical thermometer.* By GEO. M. STERNBERG, M.D., Brevet Major and Assistant Surgeon U. S. Army. (With four plates of temperature charts.)

THE materials at my command, for such a study as may be expected from the heading of this paper, are by no means so ample as could be desired. But, as I shall shortly point out, they have an especial value of their own which may, to some extent, compensate for a manifest deficiency in number. The generalizations, at which I arrive, may not be sustained when submitted to the test of more extended observations. But the study will, at least, prove profitable by inducing some of the excellent practitioners of medicine in the South, who have not yet adopted the use of the clinical thermometer, to resort to it, not only for their own satisfaction, and in the interests of their patients, but for furnishing additional graphic delineations of the course of yellow fever. And, also, of the various forms of malarial fevers, which have not yet been sufficiently investigated by this method.

My materials for studying the natural history of yellow fever (so far as the temperature is concerned) are the graphic tracings, given in the accompanying plates, and one hundred and three similar tracings, given in a valuable brochure, recently published in Paris and New Orleans, by Dr. J. C. Faget.¹

¹ The Type and Specificity of Yellow Fever. Published by Am. Sutton, 167 Rue Royale, New Orleans.

Five of the thirty-seven tracings on my plates are taken from the work of Dr. Faget, viz., Nos. 5, 6, 7, 25, 26. Of the remaining thirty-two, sixteen are from my own observations, and sixteen from observations made by medical officers of the navy during the recent severe epidemic at the Pensacola navy yard. (Kindly furnished me by Surgeon Tryon, U. S. Navy.)

Four of my tracings are from cases which occurred at Governor's Island, N. Y. harbor, in 1870.¹ Ten are from cases at Fort Barrancas, Fla., in 1873, and two from cases at the same place in 1874.

I consider these thirty-two cases particularly valuable for such a study as I propose, for the follow reasons: (a) Three different localities (Governor's Island, Fort Barrancas, and Pensacola Navy Yard), and three different years (1870, 1873, and 1874) are represented. (b) The patients were mostly adults, in the prime of life (soldiers and marines), known to be in good health previously to the date of their attack. (c) In my own cases, and I believe in those at the navy yard, expectant treatment was the rule, and the natural course of the disease was not disguised by the effects of medication. (d) All of the localities mentioned are unusually free from ordinary malarial influences (paludal). (e) The observations were taken with great care, and, for the most part, the charts are constructed from two daily observations, taken at 7 A. M. and 6 P. M.²

I shall first call attention to the tracings on plates 1, 2, and 3, which are all of cases ending in recovery, and will then resort to Dr. Faget's charts for the purpose of testing the correctness of my deductions.

The first thing that strikes the eye upon reference to the charts is that the temperature is at its acme at the very outset of the disease, or soon thereafter. In thirteen of the twenty-six tracings, the first observation gives the highest temperature reached during the whole course of the disease. In sixteen, the acme is reached on the first day. In twenty-three, during the first two days. In two cases the acme is not reached until the morning of the third day, and in one not until the fourth.

In Dr. Faget's tables (excluding all incomplete cases) the acme was reached on the first day in twenty-four cases; on the second day in thirteen; on the third day in twenty-three; on the fourth day in two; and in none at a later date. Of the twenty-five cases in which the acme did not occur until after the second day, all but one are from Dr. Faget's second series of tables, which are from observations taken at Memphis in 1873. The protracted course of the fever, and peculiarities of the tem-

¹ Some account of this epidemic is given in the number of the *American Journal of the Medical Sciences* for April, 1873. It is greatly to be regretted that temperature observations were only made in a few cases occurring at the close of this epidemic.

² My own observations were taken in the axilla, and I believe the same method was adopted at the navy yard.

perature curve during this epidemic, as shown by the charts under consideration, will engage our attention again when we come to investigate the duration of yellow fever.

In my charts the highest temperature recorded was 105.8° in No. 10, and 105.6° in No. 17. In eight cases the acme of temperature was between 104° and 105° ; in eleven cases between 103° and 104° ; in two cases between 102° and 103° ; in three cases between 101° and 102° .

In Dr. Faget's charts, a temperature of 106° was exceeded in eight cases. The highest point recorded was 107.2° , in No. 35, second series.

In 7 cases	the acme was from	105° to 106° .
In 25	" " "	104° " 105° .
In 44	" " "	103° " 104° .
In 11	" " "	below 103° .

(Sixteen cases rejected as incomplete.)

Upon further inspection of our plates 1, 2, and 3, it will be seen that after reaching its acme, the temperature falls to the normal or below in a period of from two to six days. This defervescence is sometimes continuous, as in tracings Nos. 1, 3, 4, 5, 6, 7, 8, 10, and 18; is sometimes interrupted by slight evening exacerbations, as in Nos. 2, 9, 11, 15, 17; and in two instances, Nos. 20 and 21, is apparently accomplished by three successive steps, or efforts, the peculiar character of which I shall again call attention to.

The initial fever is followed—either immediately, as in Nos. 1, 2, 3, 4, 5, 13, 18, 19, 21, 22, or after an interval of from one to four days, as in Nos. 9, 10, 11, 12—by a reactionary fever, which varies greatly in intensity and duration, and is doubtless to be looked upon as a sequela of the specific fever represented by the first portion of our tracings.

In my own cases, Nos. 1, 2, 3, 4, 9, 10, 21, 22, observations were continued for a sufficient period to fully show the character of this reactionary fever. But in the tracings obtained from the cases at the navy yard, and in those copied from Dr. Faget's tables, no record of it is found. I cannot doubt, however, that a continued use of the clinical thermometer would have shown it to be present in a majority of the cases.

Our charts show, then, that yellow fever is a continued fever of a single paroxysm. This fact, which has long been recognized, is insisted upon by Faget (*op. cit.*), and is amply demonstrated by his tables. The duration of this paroxysm is a point to which we wish to call especial attention, and upon which, we think, our charts throw some new light.

Let us first inquire what standard works upon medicine have to say on this subject:—

Wood, *Prac. of Med.*, vol. i., page 307, says: "These febrile symptoms continue, usually with little or no remission, for a period varying from a few hours to three days, and sometimes even longer. The duration is shorter in the more violent cases, and longer in the mild; and, in the latter, is sometimes extended to four or five days, with a greater tendency to remission."

In Reynolds (*A System of Medicine*) the duration is stated by Dr. Macdonald, vol. i., page 660, as follows:—

“Febrile reaction may continue for an indefinite period between a few hours and two or three days, and its duration is said to be in inverse ratio of the violence of the attack.”

In Ziemssen (*Cyclopædia of the Practice of Medicine*) the only attempt I find to define the duration of the initial fever is the following passage from the article on yellow fever by Hænisch, vol. i., page 498:—

“The second stage of the disease, beginning most commonly on the fourth day, is recognized by a noticeable remission of almost all the symptoms.”

Faget says on page 10 of his brochure (*loc. cit.*):—

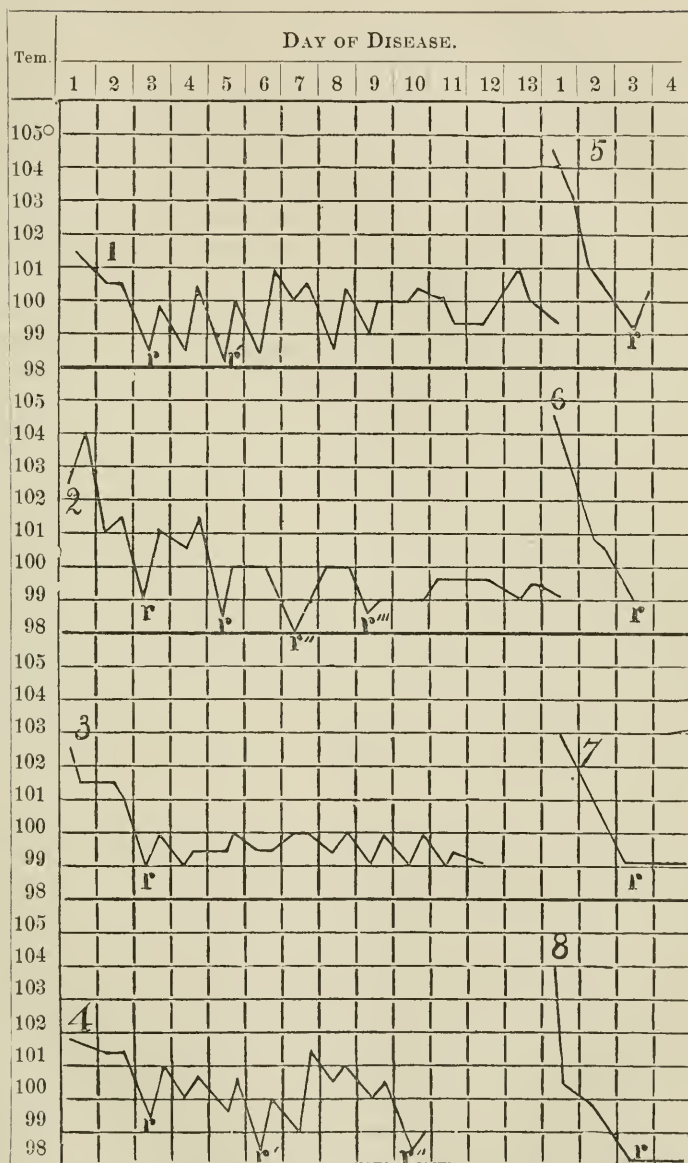
“The whole of the thirty clinical cases of 1870 combine to contradict the too readily accepted opinion regarding the seemingly *very short* duration of yellow fever. According to La Roche, of Philadelphia, whose authority upon yellow fever is based upon an immense erudition, this duration is *three days*. ‘An access of fever of about *seventy hours*’ duration, more or less, is followed by complete apyrexia” ($24 \times 3 = 72$), p. 426, vol. i. According to our tables, the duration of the *pyretic action* in yellow fever is six to seven days.”

On the following page Faget quotes from Wunderlich as follows:—

... “From the fourth to the fifth day the temperature falls rapidly, and descends to the normal number, and even below.”

It is not surprising that before the adoption of exact means of measurement, the mistake should have been made of pronouncing the fever, in such cases as are mapped on Plate I., a fever of a few hours’ duration. In these cases the flushed face, the cephalalgia, pain in the loins, and acceleration of the pulse, which mark the onset of the disease, quickly disappear, and the patient, *in the course of a few hours*, may pronounce himself to be quite well. An elevation of temperature of two, or even three degrees, may, under such circumstances, escape detection by the most practised touch. An exact method of measurement, however, tells a different story, and we find on Plate I. eight tracings, in which there is a remarkable uniformity in the duration of the initial fever. In all these cases a complete remission (or nearly so) of the fever was found on the morning of the third day. In other words, *the initial fever was of two days’ duration*. Four of these cases (Nos. 1, 2, 3, 4) are from my own observations at Fort Barrancas in 1873; one (8) my own at Governor’s Island in 1870; and three (5, 6, 7) are from Dr. Faget’s tables, as having occurred at New Orleans in 1870. I do not find in the 140 cases mapped by Dr. Faget and myself any in which the temperature fell to the normal in a less period of time, with the single exception of my case No. 11 on Plate IV. This case puzzled me at the time, and is an exceptional one in my experience, by reason of the short duration of the initial fever, and the fact that a relapse occurred after an interval of sixteen days, in which the fever was very protracted, and during which the patient trembled on the border line between life and death for a full week. We have

P L A T E I.



No. 1. Male, aged 26; Barrancas, Florida, 1873.

No. 2. " " 27; " " "

No. 3. " " 30; " " "

No. 4. " " 28; " " "

No. 5. Unknown; New Orleans, 1870, from Dr. Faget's tables.

No. 6. " aged 21; " " " " "

No. 7. " " 8; " " " " "

No. 8. Male, " 30; Governor's Island, "

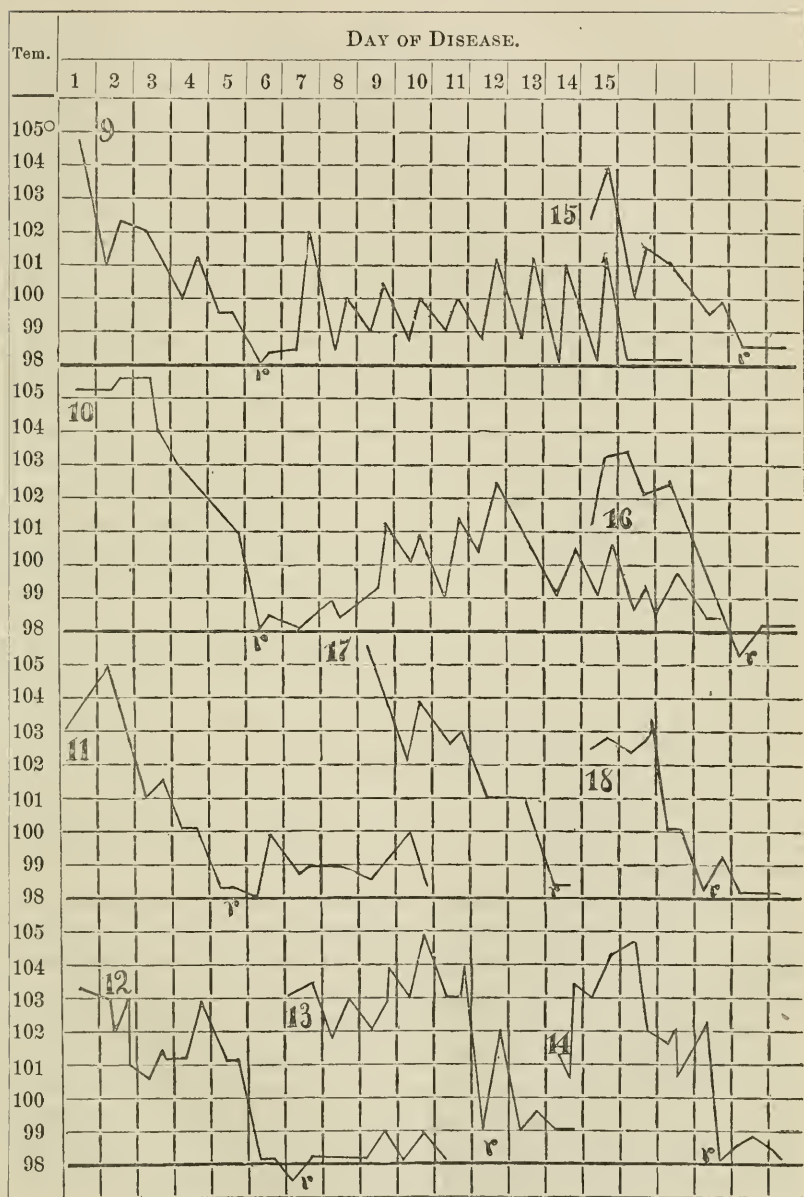
abortive cases of typhoid fever, the disease which has the most characteristics in common with yellow fever. May not the first attack in this case be considered as an abortive one, and that set down as a relapse be really a genuine first attack of the disease?

Taking two days, then, as the duration of the mildest attack of yellow fever of which we have any precise knowledge, let us look a little further. In Case 2 we find four distinct periods, of two days each, clearly delineated; that is, a remission occurred on the morning of the third day, followed by an exacerbation of two days' duration; a more complete remission on the morning of the fifth day; this followed by a third exacerbation, and a still more complete remission on the seventh day; this again repeated, with a final remission on the ninth day. This case occurred at Fort Barrancas in 1873. Referring to Cases 20 and 21 (Plate IV.), which occurred at Governor's Island, New York harbour, in 1870, we see the same tendency to a remission on the third, fifth, seventh, and ninth days. This remarkable tendency, shown especially in mild cases, might be ascribed to the combined effects of yellow fever and a tertian form of malarial fever, but for the fact that the latter form of fever prevails to but a very slight extent at either of the localities mentioned, and for the more telling fact that we shall find our period of two days, or a multiple thereof, attending us in our further investigations as to the duration of yellow fever. This characteristic of the disease, to which, so far as I know, attention is now called for the first time, may require a modification of the statement just made, to the effect that yellow fever presents more points of resemblance to typhoid than to any other fever. This tendency to periodicity certainly gives it a strong family likeness to the malarial fevers.

Referring to Plate II. we find four of my cases at Fort Barrancas placed one above the other. In three (9, 10, 12) a complete remission is *recorded* on the morning of the sixth day, and in one on the morning of the fifth. Upon closer investigation we shall ascertain that in each of these cases the duration of the fever was exactly four days. In Case 11 the attack was inaugurated on the morning of the first day, and it terminated on the morning of the fifth, exactly four days. In the other three cases the paroxysm commenced on the evening of the first day, and a complete remission *was not observed* until 7 A. M. on the morning of the sixth, although it may have occurred at any time during the preceding night. The record for the previous evening was in one case 99.6°, and in the other two 101°.

The duration of these cases, then, was four days, or just twice that of our cases mapped on Plate I. The remaining cases on Plate II., of which five are from observations taken at the Pensacola Navy Yard in 1874; and one, a case of my own at Governor's Island, in 1870, are of

P L A T E I I.



- No. 9. Male, aged 31; Fort Barrancas, Florida, 1873.
 No. 10. " " 27; " " " "
 No. 11. " " 32; " " " "
 No. 12. " " 35; " " " " 1874.
 No. 13. " " 21; Pensacola Navy Yard, "
 No. 14. " " 22; " " "
 No. 15. " " 31; " " "
 No. 16. " " " Governor's Island, 1870.
 No. 17. " " 20; Pensacola Navy Yard, 1874.
 No. 18. " " 21; " " "

the same type; Nos. 15, 16, and 17 are of exactly, and Nos. 13, 14, and 18 of about four days' duration.

Wunderlich's statement, that, according to Schmeidlein, "from the fourth to the fifth day the temperature falls rapidly, and descends to the normal number, or even below," is therefore nearly in conformity with my own observations, so far as these cases are concerned. But we have still another type exhibited on our third chart, in which the duration of the fever is twice four days. It is evident that, if the paroxysm of fever commenced on the morning of the first day, a period of eight days would be shown by remission on the ninth day. But if it commenced in the evening, or during the night preceding, the observation made on the evening of the eighth day might show a return to the normal temperature. In the cases under consideration (Plate III.) a complete remission took place on the eighth day in four (19, 23, 24, 25); and on the ninth day in four (20, 21, 22, 26). Three of these cases (19, 20, 21) are from my own observations at Governor's Island in 1870; one (22) at Fort Barrancas, 1874. Two (23, 24) occurred at the Pensacola Navy Yard in 1874; and two (25, 26) are taken from Dr. Faget's second series of tables, as examples of the type of fever which prevailed at Memphis in 1873. We see that while these eight cases occurred at four different localities, and during three different years, they all present a remarkable uniformity as to duration.

Three well-defined types of fever, then, are shown by our graphic charts.

First. The simple, or simplex, as shown on Plate I., in which the paroxysm is of two days' duration.

Second. The duplex, as shown on Plate II., in which the paroxysm has a duration of four days.

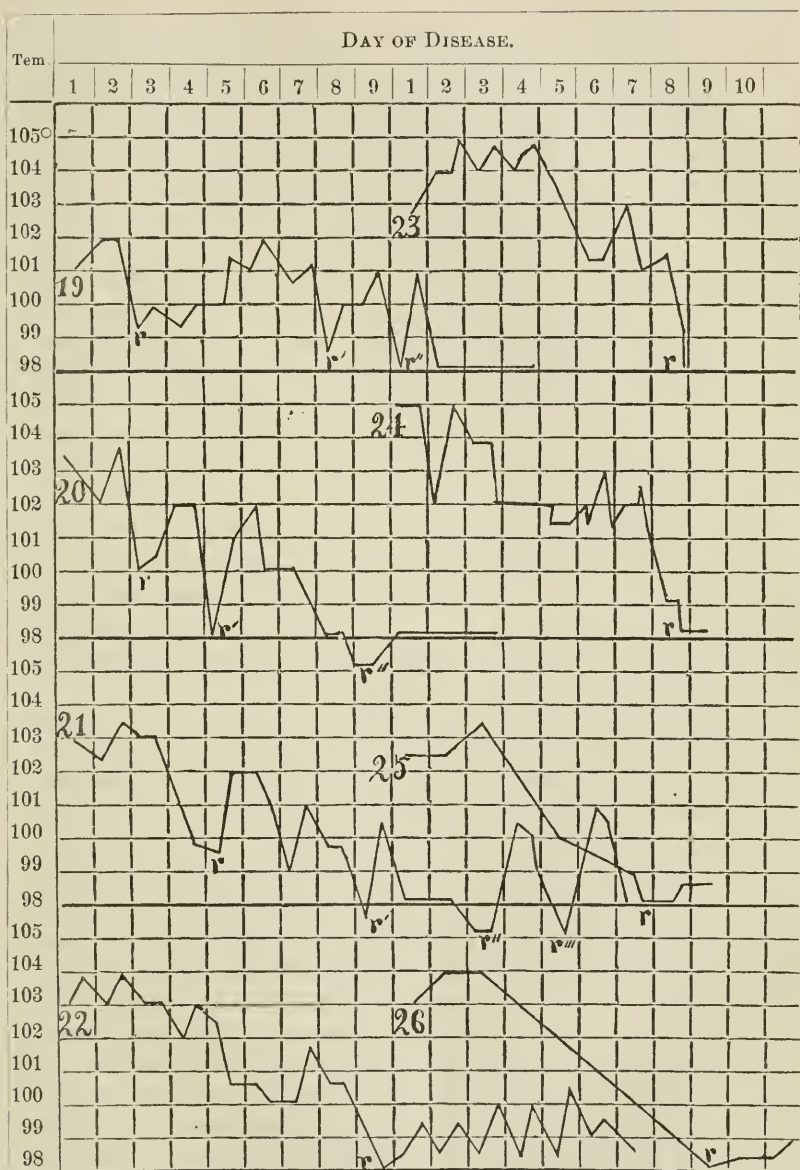
Third. The quadruplex, as shown on Plate III., in which the duration is eight days.

Case 2 on Plate I. should, perhaps, be considered of the quadruplex type, as it is plainly made up of four well-defined periods, each of two days' duration, and the course of the fever was not terminated until the fourth remission occurred on the morning of the ninth day.

Cases 20 and 21 are very instructive, as showing the compound nature of the quadruplex type. In case 20, we have a partial remission on the morning of the third day, and a complete one on the morning of the fifth. This case would have been grouped with those of the duplex type, if the observations had been discontinued at this point. A second paroxysm of four days' duration, followed by a complete and final remission, places it, however, among those of the quadruplex type.

In the 21st case, we have no remission on the third day, but a marked one on the fifth; and the period from the fifth to the ninth is clearly

P L A T E I I I .



No. 19. Male,	Governor's Island,	1870.
No. 20. "	" "	"
No. 21. " aged 18;	" "	"
No. 22. " 27;	Fort Barrancas,	1874.
No. 23. " 31;	Pensacola Navy Yard,	"
No. 24. " 25;	" "	"
No. 25. Female, " 18;	Memphis (from Dr. Faget's tables),	1873.
No. 26. " 30;	" " " " " "	"

divided into two equal portions by a partial remission on the morning of the seventh day.

We will now turn to Faget's tables to ascertain if the deductions arrived at are sustained by his observations. I shall first analyze the tracings from his first series of thirty cases, which occurred in New Orleans in 1870. In an investigation as to the duration of a fever, it is evident that all fatal cases must be ruled out, unless death occurred from a sequela of the fever, that is, after a complete remission had occurred. It is also necessary to exclude all cases that are incomplete. If observations were not made on the first day of the disease, it was probably because the patient did not come under treatment at the outset of his attack; and in such instances, especially among ignorant people, it is often difficult to fix the exact date of the seizure. In quite a number of Dr. Faget's cases, also, observations were discontinued before the temperature fell to the normal. These cases cannot be included in the investigation. Excluding, then, fatal, incomplete, and complicated cases, we have left but five of Dr. Faget's first series, viz., Nos. 6, 17, 21, 23, and 28. In Nos. 23 and 28, a complete remission occurred on the morning of the third day. These tracings I have copied upon my Plate I. (Nos. 6 and 7).

In Nos. 6, 17, and 21, the paroxysm of fever terminated on the morning of the fifth day. In No. 17, "accouchement at term" is noted as occurring on the sixth day, and in No. 21, a parotid abscess was developed. As both of these complications occurred after the remission, they do not furnish ground for excluding these cases. Tracing No. 5 on the first of my plates is copied from No. 18 of Dr. Faget's tables. It is excluded (and would not have been copied upon my plates, but for an oversight) because veratrum was given for the purpose of modifying the course of the fever, and also because observations were discontinued before the temperature reached the normal.¹

In Dr. Faget's second series of tables, the observations were made by Dr. Saunders during the fatal epidemic at Memphis in 1873. Unfortunately for our object, which is to estimate with precision the duration of the paroxysm of fever in each case, Dr. Saunders has made but a single daily observation. The tables consequently give us no information as to what time during the first day the fever commenced. It is not improbable that in some instances the day upon which the first record was made was really the second day of the disease. In civil practice and during an epidemic, it is very commonly the case that patients taken sick late in the afternoon or during the night, are not seen by a physician until the next morning. The same source of error to which attention was called in the examination of my own charts, will exist to a greater degree in these, in which but a single observation was taken daily. That is, the remission

¹ I have considered any point above 99° Fahrenheit, an incomplete remission.

which is observed and recorded upon one day may have in fact taken place during the preceding night, or even on the evening of the preceding day. These sources of error being borne in mind, we will proceed with our analysis of Dr. Saunders's tables. Excluding incomplete and fatal cases,¹ we have left 44 cases. In a majority of these the temperature fell one or more degrees below the normal, before reaction was established. It is much to be regretted that the extent and duration of the reactionary fever were not noted. In estimating the duration of the initial fever, we shall consider a fall to 98° (in a few cases a little above 98°) as terminating the paroxysm. The remarkable depression below this point, which in case 4 amounted to three degrees Fahrenheit, can hardly be considered a portion of the stage of fever, but rather represents a state of partial collapse (or the stage of calm, so often described by writers on yellow fever) and probably results from grave blood and tissue changes, produced during the period of fever. We arrange our results in tabular form as follows:—

Day upon which remission

occurred . . .	5th.	6th.	7th.	8th.	9th.	10th.	11th.	12th.
Number of cases . .	0	1	1	9	16	11	5	1

Our table shows that the fever which prevailed at Memphis was clearly of the type which we have named “quadruplex” in 25 out of 44 cases. In eleven cases the typical period was exceeded by twenty-four hours or less, in five by forty-eight hours or less, and in one by seventy-two hours or less. The fact that in a certain number of cases the duration of the paroxysm of fever exceeds the typical period which characterized the epidemic, is not surprising, and indeed was to be expected. The temperature line is apt to be deflected from its natural course, and may be maintained above the normal by a variety of causes. This would especially be looked for in severe cases.

It is only in the milder cases, and in those where there is no disturbing element—such as a complication, or active medication—that we can successfully study the natural history of any disease. In my relapse case, figured on Plate IV. (No. 11), the normal temperature was not reached until the fourteenth day of the disease, yet at the end of eight days a partial remission (p.) occurred, and at intervals of two days the same thing happened three successive times before the normal was finally reached.

Dr. Faget states in the preface to his brochure (*loc. cit.*) that the two points he desires to elucidate are “the continuity of the febrile action in yellow fever, and the fact that it is a distinct species of fever.” Both points are without doubt established. I have endeavoured to show, in addition to this, that *in yellow fever, the paroxysm of fever has a definite duration of two, four, or eight days, and that there is some evidence*

¹ 8, 12, 14, 17, 18, 20, 25, 26, 27, 29, 31, 32, 35, 37, 38, 39, 40, 41, 46, 47, 48, 49, 50, 51, 57, 59, 60, 61, 72.

that paroxysms of four and eight days' duration are compounded of two or four elementary paroxysms of two days each.

What has already been written demonstrates clearly enough that the temperature curve in yellow fever is characteristic. In uncomplicated cases, ending in recovery, it alone is sufficient to establish the diagnosis, when the record of the case is completed. But, it is highly important, in the interest of the patient, that the disease be recognized at the outset; and in the interest of the community, that first cases be promptly diagnosed and announced. Temperature observations afford us very valuable assistance in accomplishing this purpose, and a very positive opinion may, in some instances, be based upon them as early as the evening of the second day.

There is nothing characteristic in the chill, the cephalalgia, the lumbar pains, the congested eyes, and the appearance of the tongue, which mark the commencement of an attack of yellow fever. Careful temperature observations, however, enable us to exclude remittent fever, by the absence of any remission on the morning of the second day; or by its incomplete character, and the fact that it is not followed by an evening exacerbation.

The violence of the symptoms inaugurating the attack and the congested appearance of the eyes, together with the usually high indication of the thermometer at the first observation, will ordinarily be sufficient for the exclusion of typhoid fever. But in some instances (*e. g.* Cases 12, 13, Chart III.), the thermometric range is almost identical with that of typhoid for the first four days of the disease, and it is not until the characteristic defervescence occurs, that the diagnosis becomes established. The differential diagnosis between yellow fever and some of the exanthemata presents greater difficulties, and in many cases will probably be found impossible at so early a stage of the disease. On the third day, however, in the simple type, and on the fifth in the duplex, the diagnosis will be no longer doubtful. The quadruplex type may also be diagnosed by the temperature curve, as early as the fifth day in a majority of cases. Complicated cases and those which prove fatal at an early day of the disease, present difficulties of diagnosis which can not be decided by the thermometer alone. The type of the disease in any particular case may also often be determined by the temperature observations taken on the first and second days. In the simple type the fever is highest at the outset and falls from the very first.¹ In the duplex type the temperature is higher on the second day than on the first (Nos. 10, 11, 14, 16, 18); or there is a more or less marked evening exacerbation (Nos. 12, 13, 15, 17).

In the quadruplex type, as shown by Dr. Faget's tables of cases from the Memphis epidemic of 1873, the temperature does not reach its acme

¹ Case 2 on my Plate I. is the only exception to this rule, and it is doubtful whether this case should not be considered one of the quadruplex type.

until the third day (Nos. 25, 26, Plate III.); or if the acme is reached sooner, the temperature is maintained at this point until the third day, when defervescence commences.

The above remarks upon diagnosis of type also apply to prognosis as to duration.

The value of temperature observations in making a prognosis as to result, will be apparent upon reference to the following table :—

Cases in which the temperature was—	No. of Cases.	No. of Deaths.	Percentage of Deaths to Cases.
107° and above	2	2	100
106°—107° ¹	6	6	100
105°—106°	16	10	63
104°—105°	39	10	25
103°—104°	49	1	2
102°—103°	15	0	0
101°—102°	9	1	1
Total	136 ¹	30	22

It is probably impossible to determine the type in fatal cases, such as are figured on Plate IV. (Nos. 1, 2, 3), and we cannot, consequently, decide from our charts whether the prolonged (quadruplex) type furnishes the most fatal cases, or otherwise. The great fatality of the Memphis epidemic, however, in which this type prevailed, and the extremely mild character of the disease in such cases as are figured on Plate I, gives support to the supposition that the severity of the disease is directly proportioned to the duration of the paroxysm of fever.² This is, however, contrary to the statement made by several writers, viz., that the duration of the disease is in inverse ratio of the violence of the attack.³

That the quadruplex type is not, however, necessarily a severe disease, is shown by such mild cases as No. 19 on my Plate IV., and by numerous tracings from the Memphis epidemic (Nos. 71, 56, 54, 52, 51, C.).

The indications for treatment furnished by our charts are :—

First. In those cases in which the thermometer indicates 104° or above, to promptly reduce the temperature by such means as are found to be successful in other diseases. For this purpose there are various vaunted remedies. But in view of the great depression of the vital powers which follows the paroxysm of fever, I should hesitate to employ some of them (*e. g.* the lancet and veratrum). Modern therapeutics has, however, demonstrated the antipyretic power of two remedies, which I believe may be found useful in the disease under consideration. One, quinia in large doses, has already been extensively used, with the object of abbreviating

¹ Rejected as incomplete, Nos. 1, 22, and 24, of Dr. Faget's 1st series of tables.

² That the gravity of the case is, in a majority of instances, indicated by the degree of temperature reached, is clearly shown by the above table.

³ Wood, vol. i., page 307; Reynolds, A System of Medicine, vol. i., page 660.

viating the duration of the fever, or neutralizing the effect of the yellow fever poison. That it has not this power, is now generally conceded by those who have had most experience in the treatment of the disease. May it not be, however, that the beneficial effects, so often claimed for this medicine in large doses, are real, and are due to its antipyretic power, by which the danger to life from the extreme pyrexia which characterizes certain epidemics is averted?

The other means of overcoming an excessive and threatening degree of pyrexia, which has recently found much favour in the treatment of the same state in other diseases, is the external application of cold water, by means of baths or the wet pack. That the temperature may be reduced in this way, I have proved in two instances, in which I gave yellow fever patients cold baths on the second day of the disease. In neither could I discover that any injurious effect was produced by this mode of treatment. One (No. 10, Plate II.) made a good recovery, and the other (No. 10, Plate IV.) died on the ninth day. I am well aware that many physicians will be horrified by this suggestion. And at a later stage of the disease I am myself especially careful to protect my patients from any exposure to cold, as congestion of the kidneys and suppression of urine are very sure to occur, if by any means the cutaneous transpiration is checked. But that life may be saved in some instances where the pyrexia is excessive, by a resort to the cold bath, after the method recommended by the German physicians,¹ is my strong conviction.

In some fatal cases which we have mapped (Nos. 1, 2, 3, 4, 5, Plate IV.), the fatal issue can hardly be attributed to the pyrexia alone, as this was not extreme. In one (No. 6) it is remarkable for being very slight, the highest point touched being barely 102°.² To what shall we attribute death in these cases? I am inclined to agree with Dr. Faget (*loc. cit.* pages 34 and 35) in believing that the yellow fever poison has a special action on the central organ of the circulation, the heart, which is similar to that possessed by certain vegetable poisons (*e.g.* veratrum and aconite), and that these deaths are the result of paralysis of the heart, produced by the yellow fever poison. Dr. H. C. Wood, in his recent work on therapeutics, in speaking of the action of viridia (page 136), says:—

“It has not yet been experimentally determined exactly how viridia depresses the circulation; but, as I have found that previous section of the vagi does not influence the cardiac action of this alkaloid, and that when it is placed directly upon the heart of the turtle, it acts at once and powerfully, the probabilities are that it influences the heart itself or its contained ganglia.”

The indication in such cases, then, seems to be to support and stimulate the heart's action, and the use of such medicines as veratrum and aconite

¹ Niemyer, vol. ii. page 602, Am. ed.; Ziemssen, vol. i., page 210, Am. ed.

² Case of Commodore Woolsey, U. S. Navy, commanding the Pensacola Navy Yard at the outbreak of the epidemic of 1873.

for their antipyretic effect, is contraindicated by their depressing effect upon the organ of the circulation, which is probably the real cause of their power to lower the temperature.

The remarkable depression of the temperature below the normal, which occurred in several of Dr. Saunders's cases at Memphis (Faget's tables, second series, Nos. 1, 4, 11), furnishes another indication for treatment. It is evident that external warmth may here be needed, for the purpose of sustaining the bodily heat and equalizing the circulation.

Finally, that portion of our charts, 9 and 10, Plate II., which shows the reactionary fever, also teaches us a lesson as to the treatment of this stage of the disease (or sequelæ of it rather). It is evident that during the continuance of this fever the patient must be kept in bed, and subjected to careful restriction in diet, etc. It is at this time that undue exertion or imprudence in diet so often changes the aspect of a case from that of promising convalescence to one of the gravest character. This results from visceral congestions,¹ which, in all stages of yellow fever, are exceedingly prone to occur, and, indeed, are the immediate cause of death in by far the greater number of fatal cases.

We also learn from the nature of this fever, which is irritative, or easily influenced by external conditions, such as is characteristic of states of debility, that the vital powers require support. And experience teaches that those means which are most potent for the accomplishment of this purpose, viz., concentrated nourishment and stimulants, are the remedies to be relied upon for abbreviating this irritative reactionary fever.

ART. IX.—*A Case of Elephantiasis Arabum.* By JOHN NEILL, A.M.,
M.D., Clinical Professor of Surgery in the University of Pennsylvania.
(With two wood-cuts.)

The name given to this disease seems to require explanation. The term *Elephantiasis Arabum* suggests that the disease has both a generic and a special character. The word, *Elephantiasis*, implies massive, bulky

¹ Congestion of the stomach, producing a feeling of weight at the epigastrium, nausea, and finally extravasation of blood and black vomit; congestion of the kidneys, producing albuminous urine, suppression, and death from uremic poisoning; congestion of the liver, causing arrest of function; and congestion of the brain, producing wild delirium, coma, and death: These congestions are commonly attributed to an altered condition of the blood, but it may be questioned whether they are not rather the result of partial paralysis of the nervous centres for the organs implicated; just as the early failure of the heart's action, in certain cases, is supposed to be from the paralyzing effect of the specific poison which produces the disease.

enlargement, and the addition of *Arabum* would signify some national peculiarity in contradistinction to the special character of the disease as observed in another nation, as for instance, *Elephantiasis Græcorum*.

This nosological difficulty is much increased by the frequent use of the term "lepra" as synonymous with "elephantiasis," especially as varieties of lepra have been classified as lepra of the Arabians, lepra of the Greeks, and lepra of the Jews.

Before describing this case it may be proper to clear up some of the confusion that exists among writers upon the subject, especially as this confusion is to be found in many of the best surgical text-books of the day. And in order to reconcile these unsatisfactory statements, and to make the subject more easily understood, we will place in tabular form the terms and diseases which have given rise to loose and indefinite language among writers and teachers: 1. Elephantiasis Arabum; 2. Elephantiasis Græcorum; 3. Lepra Arabum; 4. Lepra Græcorum; 5. Lepra Judæorum.

Of all these five terms the last, *Lepra Judæorum*, or the leprosy of the Jews, is perhaps most familiar. The very accurate and detailed description of it given in Leviticus, chap. xiii., is probably the first knowledge which most persons have acquired upon the subject, but the frequent allusions to it made by modern writers in their descriptions of travel makes this word not strange even to unprofessional ears. So many travellers not only in the east, but in many other countries, have seen and described this disease, that the term leper and leprosy, and leper hospital, have become familiar to the general reader.

The disease prevailed not only among the Jews during their sojourn in Egypt and wanderings in the wilderness, but we also read of it in the New Testament in the time of Christ. At the present time we find it not only in Syria, where it is supposed to occur most frequently, but also in all the countries of Europe, north and south, and in America. All of the characters of this form of leprosy, wherever found and wherever described, pertain also to two others in the table, viz: *Elephantiasis Græcorum* and *Lepra Arabum*, so that we have but one disease represented by three names.

Elephantiasis Græcorum, *Lepra Arabum*, and *Lepra Judæorum* are one and the same disease, which have received different nosological titles owing to peculiar historical circumstances which must be alluded to for a thorough comprehension of this subject. The leprosy of the Jews is a misnomer, for it is not peculiar to Jews; it existed all over the world, in the middle ages, and at the present time in Scandinavia, but we learned its characters in the Mosaic books and Jewish histories, and hence the race of the writers has been attached to the disease. So the terms Arabum and Græcorum have no signification as to a country or to a people, but to the writers originally describing the disease. It is not a disease of Arabia or Greece, not of Arabs nor of Grecians, but a disease described by Arabian writers and Greek authors.

The Grecian medical writers, Lucretius, Aretæus, Galen, and others designated as *Elephantiasis* that fearfully fatal constitutional disease, characterized by tubercular patches and ulcerative formation, which has already been alluded to. This same disease was well known to the Arabians, and called by them Judam, Juzam, etc. etc., but the translators of the Arabian writers into Latin called it *Lepra*, and hence the term *Lepra Arabum*. It is a constitutional blood disease, probably originating in a distinct poison, and manifesting itself by deposits in the skin and mucous membranes of the body, in this respect bearing some analogy to syphilis or

to cancer. The disease presents itself in two forms, the *Tubercular* and the *Patchy*, which differ materially in their external characteristics.

In the tubercular form nodules are deposited in the skin, most frequently in the skin of the face. Sometimes the nodules are rounded in form and erythematous in colour; in other instances they are like elevated ridges and of a brownish or bronze colour, giving a horrible expression to the face. When these tubercles are new they are almost always of the reddish hue, but enlarge in size as they grow older and become of a purplish or brown tint. They vary from the size of a pea to that of a pigeon's egg. They may subside, leaving behind them white or bronze patches, or they may become stationary for years, but more frequently they inflame, soften, and ulcerate, and then discharge a yellowish-white granular albuminous substance. The secretion may dry and form a dark, thick crust over a deep ulceration. When the ulcer is open, it is deeply excavated, surrounded by thick, hardened irregular edges; the circumference being livid, hard, uneven, and painful. Sometimes an ulcer will heal and leave white, hard, irregular cicatrices, but as one ulcer heals others form and the disease extends itself to other surfaces of the body. The mucous membranes are frequently the seat of the disease, especially the conjunctiva, Schneiderian membrane, mouth, larynx, etc.

Post-mortem observation shows deposits in the trachea, bronchial tubes, pleura, and lymphatic glands, but not in the lungs. In the abdomen the disease is plainly seen in the mesenteric glands and in the peritoneum. In the closed cavities of the body the deposit of tubercles is abundant, but although they soften, yet they never ulcerate. The spleen, kidneys, bladder, uterus, Fallopian tubes, and ovaries also suffer, but the pancreas escapes. The lymphatic glands always manifest much disease corresponding with the special localities of its manifestations.

The *patchy* or *anæsthetic* form of the disease is milder than the tubercular. The progress is slow and insidious, but the constitutional symptoms are the same; languor, lassitude, dulness, etc. The skin is pale and shrunken, and the muscles relaxed. The nervous system seems to be the seat of the disease, and the morbid appearances result from defective innervation. The marked local symptoms are areas of *insensibility*, and *atrophy*. These patches of skin become covered with bullæ, filled with a peculiar fluid. Afterward the surface ulcerates and becomes painful, the discharge is constant and often crusts.

When the ulcer heals, the cicatrix is white, smooth, depressed, less sensitive than the surrounding parts, and destitute of hair. If hair returns, it is always white and fine. In other places the skin assumes an erythematous blush, and becomes of a light-purplish tint. After a prickling pain and increased sensibility for a time, the skin will become pale and insensible, and it may hang in folds or be drawn tightly over the part affected. Oftentimes the patch not only ulcerates, but the whole limb wastes; joints become distorted, and finally cartilages and bones are lost. The mucous membranes also suffer in the anæsthetic form of elephantiasis Græcorum, and it frequently attacks the eyelids, nose, and mouth. The morbid element differs from that of the tubercular form in being transparent and colourless, instead of opaque and whitish. After death it is found not only in the thoracic and abdominal viscera, but also in the brain and spinal cord. Of twenty-four deaths occurring in a hospital for this disease, the average duration of life was eighteen years and a half. (Hebra.)

The disease tabulated as the fourth, *Lepa Græcorum*, was described by the

Greeks as *lepra*, a perfectly harmless skin disease, characterized by large scales upon a thickened derm, and similar in all respects to the non-contagious lepra of the present day. This brings us to the consideration of elephantiasis Arabum, the first name in the table, and the special subject of our report.

The disease described by the Arabian writers, Albucasis, Avicenna, Haly Abbas, Rhazes, and Benzoar, is a local affection particularly observed in the lower extremities. The characteristic bulky thickening of the parts is not mentioned at all by the Greeks.

The term Elephantiasis Arabum, as now used, indicates a hypertrophy of the fibrous tissue of the skin, and of the subcutaneous connecting tissue, which subsequently involves the adjacent tissues and organs, caused by local inflammation affecting the bloodvessels and lymphatics. It is observed in all countries, but especially in warm climates. On the coast of the Mediterranean, in the West Indies, and in South America, many cases occur, but we find it in Europe and in this country. The case which is the special subject of this paper was born and raised in Sussex Co., Delaware, and I have seen two other cases in Philadelphia. Its most frequent seat is the leg and foot, but rarely is more than one limb affected. Next to the leg the penis and scrotum are the localities most frequently involved, and it has occurred upon the corresponding parts in the female. The arm, forearm, and hand are but rarely affected.

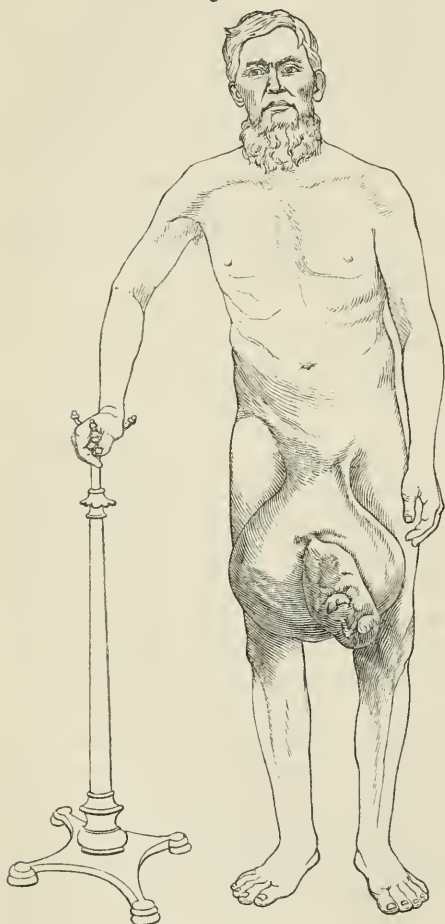
Elephantiasis Arabum of the leg is so common in the West India Islands that it is often designated as *Barbadoes leg*. It commences with an erysipelatous inflammation of the skin of the leg. After some constitutional symptoms, fever, etc., the skin appears red and swollen, becomes painful and hot. As the febrile symptoms subside the œdematous swelling remains. Subsequently another attack of pain with increased swelling takes place, the redness, fever, and pain subside, but not so the swelling, and thus by constantly recurring attacks after greater or less intervals, the limb remains permanently swollen, pale, shining, and, upon examining by pressure of the finger, the pitting which takes place is not like that of ordinary dropsy, but there is a sense of resistance or hardness. This thickening and hardness are due to an increase and induration of the subcutaneous tissues. Sometimes a red line indicative of the course of the lymphatics is seen running toward the groin, and the inguinal glands become affected. After this the leg increases in size without inflammatory action, the œdema continues, and the hypertrophy attacks the fascia, walls of the vessels, and intermuscular septa beneath. Thus the leg enormously increases in size, and with its creases and monstrous folds overhanging the foot, which has also become huge in its proportions, the whole limb does not look unlike that of an elephant.

The skin does not always remain smooth, pale, and shining, but often becomes dark-coloured and of a dirty appearance. The epiderm is thickened and scaly, and in the cracks between the folds it often softens, and

becomes pulpy, while the emitted odour is exceedingly offensive. Sometimes attacks of eczema occur, followed by vesicles and yellow or brown crusts, and surrounding discoloration. With such a limb as this, the patient must necessarily walk slowly, not merely from its size and weight, but from the change in the muscles and other tissues. When standing long in the erect position the limb is more painful, and when reclining the œdema is less.

Elephantiasis Arabum of the scrotum and penis is well illustrated in the patient figured in the cut. Although somewhat pale and sallow, and not

Fig. 1.



a very muscular man, yet he cannot be said to have a very unhealthy appearance. He is thirty-five years of age; married. Has been a labouring man upon a farm in his native State, but has been unable to work for seven years, on account of the great mass hanging between his limbs. He can move about the house, however, with greater ease than might be supposed, but his most comfortable position is in bed. The measurements of the mass are as follows: 37 inches in its antero-posterior circumference; 34 in its transverse. It is not as large a specimen as the one in the museum of the University, which was taken from a coloured man named Nelson, and who was operated upon in New Orleans by Dr. Picton, in 1837. An experienced surgeon of the navy informs me that he has seen in Rio Janeiro a coloured man with elephantiasis scroti, who carried it in a wheelbarrow in front of him, and cases are reported where the scrotum touched the ground. Professor Ballingall removed a mass of this kind weighing 106 pounds.

It is now fifteen years since the man, the subject of this case, discovered some swelling at the end of the prepuce, but the details of his symptoms are somewhat unreliable. It is believed, from his statement, that he had congenital phimosis, which had not given him any inconvenience until this time. He gives unsatisfactory details of the progress of his case,

and he has not been under medical treatment until within the last few years, when he placed himself under the care of Dr. C. H. Richards, who has charge of the Sussex County Almshouse, near Georgetown, Delaware. According to the patient's statement, the growth, which involves both penis and scrotum, was arrested in its growth for some years, but that during the past five years its increase has been steady and rapid. As this mass was turned from side to side, a moisture was very noticeable in either groin, which was partly composed of macerated cuticle, being quite offensive. The mass was attached to the body by a pedicle, which reached back as far as the anus. The portion which looked like the penis appeared to be a hypertrophied and elongated prepuce, but near its root at the side could be felt something like the dense structure of the corpus cavernosum, but which was judged to be the glans penis. Nothing but the operation determined the point. The general colour of the skin was uniformly of a pale pink hue; the surface smooth for the most part, showing some slight symptoms of corrugation, especially in front. There were four or five fistulous orifices at the lower portions, whence a fluid composed of blood, thin pus, and urine escaped. The flow of blood was much increased by the motion incident to his travel to the city, but a rest of ten days was allowed before any surgical interference was attempted.

When he stood erect, the mass reached almost to his patellæ (see figure). The thickened skin was so dense, that it could not be pinched up beneath the fingers, nor could it be bent without using both hands. When it was stretched, slight furrows were developed, resembling those seen in the abdomen of a child-bearing woman.

The operation was commenced by introducing a catheter and, after splitting up the penis, making a forked incision resembling the letter Y. From the top portion of the Y two incisions were made along the perineum, meeting in front of the anus.

The catheter could not be introduced more than eight or nine inches on account of a stricture which accounted for the urinary fistulæ, but after splitting up the penis to this point it was passed into the bladder.

The structure which appeared to be merely prepuce was in reality hypertrophied structure involving the penis itself. Every incision was followed by free hemorrhage, and the escape of much clear serum. There was great difficulty in securing the vessels, as they were dilated, tortuous, and thin, and the structure in which they were embedded was so dense that it was impossible to draw them out with a tenaculum. The veins were large sinuses, and as the dissection progressed it became necessary to secure the bleeding orifices by needles and with ligatures. Even this was unsatisfactory, as every vessel bled from each cut extremity and the tissue could not be compressed by the ligature. As the openings made by the knife became larger, numerous assistants were necessary to compress and secure vessels in different portions of the wound. This hemorrhage was so troublesome and exhausting that ultimately another expedient had to be resorted to. This was to include a portion of tissue between two strong ligatures and then cut between them. By this means the operation was completed after four hours of most arduous labour. The portion of the penis not evident to the eye was as large as that of a horse, and the urethra perforated at various points. The testicles were found to be smaller than usual and the cord had the appearance of a hydrocele. The testicles were preserved, and the edges brought together by sutures. This approximation was unsatisfactory, owing to the dense character of

the structure, in which there was no pliability. It was very difficult to secure them around the stump of the penis.

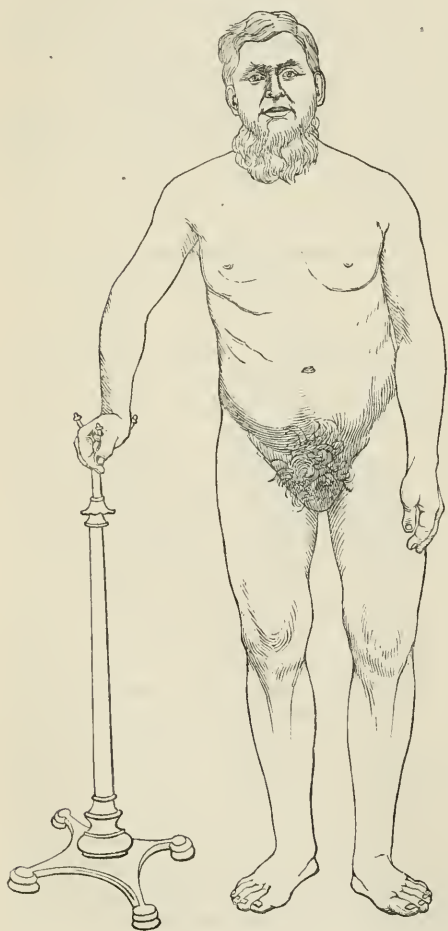
The patient was greatly exhausted, and his reaction was very slow.

Notwithstanding his depression the process of reparation began in a few days. These dense fibrous tissues, which seemed to have no sensibility and to be merely channelled by bloodvessels, began to swell and to become painful, and on the right side the sutures gave way, and allowed changes in the surfaces to be watched. Effusion of lymph and the formation of granulations took place very slowly, and the latter never had the characters which are manifested in an ordinary wound. The surfaces were sensitive, but never very vascular.

As the ligatures came away there were on two occasions slight hemorrhages of a few ounces, but they were easily controlled by pressure and ice.

Some of the ligatures, from the manner in which they were applied, were very slow in being detached.

Fig. 2.



There was some sloughing of the edges of the wound, and the dressings consisted of cloths wrung out of hot water and permanganate of potassa, and occasional warm poultices. After the parts became clean, weak solutions of chloride of zinc and solutions of nitrate of silver were frequently applied until the union was complete. He passed his water comfortably as soon as he reacted after the operation, and never had the slightest difficulty afterwards.

During his convalescence five or six small abscesses formed upon the lower part of the abdomen, which sometimes gave him some constitutional disturbance until they were freely opened and discharged.

He gradually increased in strength and health, and when he was discharged cured from the hospital, March 19th, he weighed 173 pounds. When he came into the hospital he weighed about 165 pounds, his greatest weight previous to the operation had never been over 170 pounds. The appearance of the part after the operation is shown in Fig. 2.

The weight of the mass was 25 pounds.

Microscopic Examination by Dr. E. O. Shakespeare.—The sections were made vertical to the surface, and included the epidermis, corium, and subcutaneous tissue. The epiderm was much thickened in some places, and elevated into wart-like prominences, especially at the preputial extremity, but in other parts it was unusually thin. The superficial strata of the horny over these elevations were partly separated from the cells beneath. The deep cells of the rete-mucosum were granular, much pigmented, and had walls scarcely distinguishable. The papillæ beneath this thickened epiderm were enlarged and prominent. Vascular loops were recognized in them, notwithstanding the cellular hyperplasia which existed. The great mass of these cells surrounded and seemed to be confined to the neighbourhood of the capillary loops. Where the epidermis was thin no papillæ could be made out, nor was there present in the connective tissue which supported this epidermis any cell infiltration. In this part of the papillary layer there appeared to be almost an entire obliteration of the vascular plexus, both lymphatic and sanguineous. Nowhere was there found the slightest trace of nerve, hair-follicle, or sebaceous gland, except, perhaps, a few strings of fibrous tissue which possibly held the position once occupied by the last two structures. Beneath the hyperplastic papillæ the vascular net was very distinct, and the walls of the capillaries and the arterioles, as well as of the arteries ascending to them from the deep parts of the corium, were much thickened, and along their course at varying distances were clumps of free nuclei, round and spindle-shaped masses of germinal matter or protoplasm. The lymphatics and veins in this situation were dilated. This part of the dermis was not greatly hypertrophied. The proliferation of fibrous tissue was here entirely confined to the vicinity of the above-named vessels. Deeper, the corium consisted wholly of interlacing bundles of dense, white fibrous tissue, and presented in a marked degree the fibrous metamorphosis characteristic of the pathological condition existing in elephantiasis Arabum. Many of these bundles were evidently thickened and sclerosed perivascular sheaths of arteries which occasionally could be seen occupying their axes. In most of these thick fibrous bands, nothing like a bloodvessel could be made out, but the presence not unfrequently in their course of masses of free nuclei and nucleated round and spindle-shaped cells, which were usually seen on those bundles containing an artery in their centre, as well as their general direction and size, excited the suspicion that their genesis also was to be found in the complete sclerosis of an ensheathed artery. The general course of these thick bundles was the same as that of the arteries which ascend from the subcutaneous connective tissue to the capillary plexus beneath the papillæ. Between these large bundles of dense fibrous tissue and supporting and connecting them, was an intricate network of much smaller, less dense, and more wavy bands. In this part of the section were seen the lumina of numerous ectatic veins, which, although sometimes closely following the course of an artery, were more frequently observed in the meshes of the delicate network before mentioned. The walls of these dilated and tortuous veins seen in longitudinal, oblique, and transverse section caused the fibrous mass to present very fairly the worm-eaten appearance very commonly seen in commencing cavernous transformation of fibromas. In the corium, especially in the deeper parts, through the finer fibrous meshes were dispersed a large number of granular masses, free nuclei, round and spindle-shaped nucleated cells, some of the latter in a

state of irritation and division. Nothing could be seen of the true structure of the panniculus adiposus, or of the tunica dartos, nor could the lymphatics be made out in the deep part of the corium.

The picture presented by these sections, it will be seen, differing materially from that drawn by Rindfleisch, was essentially in accord with the views of Virchow, Teichmann, Fox, and others, respecting the genesis of this hypertrophied tissue.

ART. X.—*Account of a Case of Stricture of the Œsophagus, with the Pathological Changes developing it.* By HENRY H. SMITH, M.D., Emeritus Professor of Surgery in the University of Pennsylvania.

THE rarity of cases of stricture of the œsophagus, and the singularity of its development in an apparently healthy person, without any hereditary taint of cancer or serofula, and without any pre-existing œsophagitis, mechanical injury, or tumour to account for its production, induce me to present a brief history of this case.

Mrs. L.—, aged 50 years, always enjoying excellent health—weighing about 150 pounds—of a rosy clear complexion and well-marked “embonpoint,” began, about June 1, 1874, to complain of a feeling of uneasiness and “of something in her throat.” A careful examination which I made at this time developed nothing; the fauces, half arches, etc., were of a healthy colour, the follicles not irritated, and I could not find anything in the larynx to explain the slight hoarseness of which she also complained occasionally.

As she was of a nervous temperament, and had recently suffered from mental anxiety and fatigue, owing to the illness of a son, I prescribed bromide of potassium, which, in a few days, greatly relieved her.

In the early part of July she went to the sea-shore on account of her son's health, and whilst there noticed increased trouble in her throat, especially on eating fish, with occasional difficulty in swallowing other solids, though readily swallowing liquids. On her return to the city in August, as I was absent, she consulted a physician, who, regarding the case as one of paralysis of the muscles of deglutition, treated it by the application of electricity, solution of nitrate of silver, etc. Obtaining no relief, she again consulted me on October 13th. On requesting her to swallow some water, I was struck by her gulping efforts, and at once insisted on an examination of the œsophagus by a probang. Being unable to pass the smallest of these œsophageal instruments I at once informed her husband of the serious character of her complaint, and the danger to be apprehended from a stricture of the œsophagus; but, as close questioning failed to develop any cause for such a condition, I requested a consultation with Prof. Joseph Pancoast.

Another careful examination by Prof. Pancoast showed that it was impossible to pass the smallest wax bougie, owing to the tightness of a stricture on a level with the cricoid cartilage. The patient, however, being yet able to swallow a small amount of liquid in twenty-four hours,

it was decided to continue the use of the bromide so as to diminish the sensibility of the pharynx and to make daily efforts to overcome the stricture by the use of the bougie. After several attempts I recognized the fact that the right side of the pharynx and œsophagus, and beyond the middle line of the latter, was impermeable; but I succeeded, on October 29th, in engaging a small urethral wax bougie of the size of a small quill, within the stricture by keeping the extremity of the instrument well over to the left wall of the œsophagus. No tumour or other swelling or enlargement either within or without the œsophagus could be felt at this time, but the stricture was hard, dense, and resisting, causing the bougie to become flattened and bent. At this date the following was her condition:—

Symptoms.—No tumour or other swelling or enlargement of the neck other than that caused by a general deposit of fat which caused a “double chin,” and seemed also well diffused over the chest. Any attempt to swallow liquids was at once followed by three distinct gulps (always *three*), each being accompanied by a peculiar “whirr” or gurgling as if air escaped from the throat or a liquid passed through an irregular chamber.

The tongue and fauces were perfectly natural in colour and surface, but there was a free secretion of viscid mucus hawked up from the pharynx and larynx, with occasional cough and slight hoarseness. This hoarseness was marked at times but not constant, and the effort to swallow was occasionally followed by cough and regurgitation of the liquid. Pulse good; digestion natural; bowels evacuated every twenty-four hours; urine normal and sufficiently abundant, though she took less liquid than usual. Sleep natural, except occasional starting and fear of suffocation, which passed off on sitting up.

Oct. 31st. After daily efforts with the *urethral* wax bougie of the largest size I succeeded to-day in passing a small œsophageal catheter of the French pattern, with a long flexible and conical extremity, and introduced with a good large syringe a quart of strong soup. The amount *swallowed* in twenty-four hours at this time did not exceed three ounces, and emaciation was becoming marked, yet there was no suffering from hunger or thirst. I now dilated the stricture once or twice a week with a medium sized œsophageal bougie, so as to facilitate the introduction of the stomach tube. After a few days, in order to diminish the emaciation, she was fed twice daily, taking, by means of the stomach-pump, five pints of the strongest soup, with vegetables in it, each morning, and five pints of cream thickened with tapioca, arrow-root, flour, etc., in the afternoon.

Dec. 30th. The ability to swallow anything having gradually diminished, the loss of power in the muscles of deglutition was evident, and, though I feared that this was due to adhesion or infiltration of the muscular fibres, I yielded to the solicitations of her friends and tried the interrupted current of a battery as applied by my friend and former pupil, Dr. Jas. Collins, who was experienced in the manipulation of this remedy.

At first the muscles (even the sterno-hyoid and cleido-mastoid) failed to respond, but on the second attempt did so, and the twitching became painful, but there was no improvement in deglutition.

Jan. 4th, 1875. The application of the electrical current has been followed to-day by a slight power of swallowing, the patient taking about two teaspoonfuls of water in twenty-four hours. To allay the dryness and stiffness of the mouth and throat, she rinses the mouth and gargles with glycerin and water. Œsophageal catheterism was yet free, and the amount

of food taken the same as before stated, except that an ounce of brandy was added to each meal of cream, and bromide of potassium, one scruple, was given in the soup as administered by the pump. Emaciation was now apparently checked, the patient being able to attend to her household duties and occasionally ride out in a carriage. Occasional spasms of the larynx in inspiration, like whooping-cough, were, however, now noted, and the sense of suffocation during sleep increased.

17th. Passed an œsophageal bougie to-day of the size of an adult fore-finger which caused pains in the ears and head, and was followed by a trifling show of blood.

21st. Hoarseness increased; no power of swallowing; œsophageal catheter, small size, passes readily on left side; skin over the larynx blistered.

26th. Throat painted with Lugol's solution of iodine; croupy spasmodic cough increasing at night, and also after feeding; strength good; patient yet attending to household duties and taking five pints of liquid food by the stomach-tube morning and evening; bowels moved daily by enema.

Feb. 2d. A very bad night; difficult respiration with sense of suffocation; great restlessness; no fever; no sweat; has never shown symptoms of hectic; voice less hoarse, but there is a cyanotic hue about the lips; spirits depressed, anticipates sudden death. Fed as usual, also took bromide grs. xl.

3d, 10 A. M. Had a better night, less suffocation; laryngitis continues. 5 P. M. Since 12 o'clock has had very great difficulty of respiration, but is able to sit up and be dressed as usual; pulse rapid and feeble; hue of skin more cyanotic; was fed as hitherto sitting in a chair; most oppressed in breathing when reclining; seemed more comfortable after being fed. As the symptoms of impending death seemed marked, and I feared the rupture of an abscess or some sudden disorder of the trachea or larynx, I notified the family of her condition and agreed to visit her again at 8 P. M.

7.30 P. M. Being suddenly attacked with a spasmodic cough in the midst of a conversation about her affairs, she made two or three efforts to breathe, and quietly expired in about three minutes.

Post-mortem Examination.—Permission being only obtainable to examine the neck, and a promise exacted that *nothing* should be removed, I made the examination on February 5, at 12 o'clock, thirty-eight hours after death, assisted by Drs. Jas. Collins and Ewing Jordan, whilst the corpse lay in the ice-box. I made an incision in the median line of the neck, which showed considerable fat and an enlarged thyroid gland, it being hypertrophied in both its lobes, to the size of a small egg flattened in its long diameter, the lobes extending over, around, and behind the larynx and œsophagus, so as to reach the front of the cervical vertebræ. The tongue being separated from the os hyoides, the trachea and œsophagus from the pharynx to the level of the first rib were carefully removed entire. Inspection from above now showed the epiglottic cartilage unchanged, the pharynx of a pale pink colour and filled with viscid mucus. The pharynx at the point where it terminates in the œsophagus, and to a point just below the level of the cricoid cartilage, was very much thickened and indurated in its walls, especially on the right half, where there was an evident pouch or "cul-de-sac" inclining obliquely towards the left side. On passing the œsophageal catheter into the œsophagus on the left side of this pouch, it entered the œsophagus through a strictured orifice about one-fourth of an inch thick, the structure being very much indurated by a deposit

outside the œsophagus. The œsophageal mucous membrane, like that of the pharynx, was of a pale pink colour, exhibiting no evidence of inflammation. On slitting up the œsophagus vertically upon the catheter as a director, the stricture was shown to be the result of a vertical scirrhus deposit outside of and in the walls of the œsophagus, especially on the right side. This indurated tissue was apparently a true scirrhus and "cried under the knife" cutting like a turnip. I regret our inability to examine this tissue microscopically. In the middle of this deposit was a prominence not unlike the enlarged third lobe of a prostate gland, which was evidently a scirrhus lymphatic gland, which, being situated between the trachea and the œsophagus, encroached upon each canal. On opening the trachea and larynx the mucous membrane was found to be much congested throughout its length, the enlarged lymphatic gland just alluded to projecting into the larynx at its junction with the trachea so as nearly to close it. The vocal chords were œdematous, thickened, and congested in their mucous covering, and the vocal pouch was filled with croupous exudation.

It was therefore shown that the stricture of the œsophagus was created by hypertrophy of the thyroid gland, the lobes of which pressed it laterally; by a scirrhus deposit in a cervical lymphatic gland which encroached upon the larynx so as greatly to obstruct it, and by a deposit in the walls of the œsophagus, especially on the right side, of a scirrhus character, which gradually obliterated the canal except at the point on the left side, through which the œsophageal catheter was passed twice daily. There was no softening of the œsophagus above or near the seat of stricture, and no ulceration. The goitre had been recognized in early life, but had diminished in size and been so concealed by the deposit of fat on the neck as not to attract attention at the time, yet it had contributed to the obstruction of the œsophagus by pressing upon it laterally. The pharynx and œsophagus were closely adherent to the fascia covering the muscles on the front of the vertebræ, and death had resulted from obstruction of the larynx, ending in spasm.

An interesting point in the treatment of this case was the nutrition of the patient for ninety-six days by means of the soup and cream, each being thickened, as much as was possible for use by the stomach-tube, with vegetables, as peas, potatoes, carrots, turnips, etc., or with some farinaceous element, as tapioca, flour, etc. The absence of any sense of hunger or thirst under this diet was also worthy of note.

ART. XI.—*Two Cases of Ununited Fracture successfully treated by Operation.* By JOHN H. PACKARD, M.D., one of the Surgeons to the Episcopal Hospital, Philadelphia.

CASE I. *Forearm.*—Samuel S., æt. 22, was admitted into the Episcopal Hospital December 11, 1874, having on the 2d of September broken his

left forearm by a fall from the rigging of a vessel. Although it was, therefore, ninety-nine days from the date of the injury, no bony union had taken place between the fragments. The forearm was wholly useless, its distal portion hanging loosely, and movable in every direction. Some degree of atrophy of the muscles seemed to have occurred. By measurement, the upper fragment of the radius was found to be $3\frac{5}{8}$ inches in length, the lower 6 inches; the upper fragment of the ulna was 6 inches long, the lower $4\frac{1}{2}$. And yet, for a reason readily found in the normal anatomy of the part, the two bones seemed to have been broken at nearly the same level, a little above the middle.

The impression received on handling the member was, that the corresponding fragments were united by ligamentous bands, and were somewhat rounded off, and this proved to be correct.

The man seemed in good general health, and said he had always been so; he denied having ever had any venereal disease except a gonorrhœa, contracted about a year previously. He knew of nothing unfavourable in his family history.

Resection was determined upon; and, as a preliminary measure, on the 18th of December I made a sort of acupuncture of each fragment, by introducing a strong awl through the skin. Some soreness followed, but subsided in a day or two.

An accurately fitting tin splint was provided, to give firm support to the limb from the middle of the upper arm to the ends of the fingers, the elbow being bent at a right angle, and the forearm semi-prone.

On the 22d, the patient being thoroughly etherized, and hemorrhage guarded against by the application of Esmarch's apparatus, I made an incision about 4 inches long, exposing the ends of the ulnar fragments, which were somewhat rounded off, and connected by a fibrous band. These were next turned out, and cut off obliquely, partly with a Butcher's saw, and partly with a chain saw; the use of the latter instrument being found preferable, as involving less forcible distortion of the parts. The sawn ends were then drilled, through one wall only, with some difficulty on account of the ivory-like hardness of the osseous tissue, and a piece of pure silver wire was passed through both holes.

A similar procedure was next practised upon the radius, when both wires were drawn tight, and the corresponding fragments secured in accurate apposition by giving each wire three twists from left to right. The wires were left an inch or more in length, and bent at their points of emergence from the wound, so as to lie upon the skin, which was protected by a piece of lint. Very little hemorrhage took place on the removal of the elastic tourniquet, and the wounds were closed with lead-wire sutures. The limb was then placed in the tin splint, and carefully bandaged, a solution of silicate of soda being brushed on the successive layers of bandage, so as to make the apparatus immovable. A hole was cut in the bandage, large enough to allow of the application of a laudanum dressing at the seat of operation.

Very little constitutional disturbance ensued, and in a few days the patient was allowed to get up and move about.

From this time the local treatment was very simple, the dressings being renewed daily, and the whole apparatus removed and reapplied once every week or ten days. Iron and quinia were given internally, and for several weeks the phosphate of lime in solution, grs. x, thrice a day. The patient grew fat and hearty, and the mobility at the seat of fracture became less and less.

On the 9th of April, 108 days after the operation, I passed the ends of the radial wire through the holes of a wire-twister such as is used in cases of vesico-vaginal fistula, and pushing the instrument well in, keeping the wire tense, I made three turns from right to left, thus untwisting the wire, which was then readily withdrawn.

On the 25th, 124 days after the operation, the ulnar wire was removed. It had so far cut its way through as to yield to the force used in pushing the wire-twister home, and was drawn out as a loop, without untwisting. With each of the wires there came out a few very small fragments of necrosed bone.

The forearm was now quite firm and strong. All the motions were made freely, although the muscles were cramped and enfeebled by nearly eight months of inaction. The amount of bony deposit was such as to cause some swelling on the posterior aspect of the limb.

The wounds soon closed completely on the removal of the wires, and the patient, well pleased with the result, was allowed to return to his home in New Jersey, promising to report again at the hospital before he went to sea.

A case very similar to the one now detailed is reported by Mr. Annandale in the *British Medical Journal*, for January 9, 1875. (See *Monthly Abstract of Medical Science*, March, 1875, page 127.)

The man was 29 years of age, and the injury was of six months' standing. It is not clearly stated whether or not the fracture was compound, but a large piece of the ulna had come away, leaving a gap of an inch between the fragments, which were rounded, and connected by a fibrous band to one another and to the radius. The latter bone was partially united. The operation seems to have been very much the same as in my case, but the kind of splint used is not distinctly stated. In four months after the operation, union was firm, but pronation and supination were limited.

It would *a priori* be supposed that non-union would be very apt to occur in fractures of both bones of the forearm at or near the middle, from the small size of the bones, and the difficulty of keeping them in accurate apposition. And on careful examination of the statistics given by Dr. Norris (*Contributions to Practical Surgery*, Philadelphia, 1873), which are really the best and most complete that have to my knowledge been collected, it would seem that such is really the fact. That is, the cases of non-union are in full proportion to the total number of cases, which is not large.

From the condition of things in the case now reported, it was evident that milder measures would have been wholly futile; the rounding of the ends of the fragments, and the complete formation of fibrous bands connecting the corresponding ones, would have made any good result impossible from frictions, punctures, electricity, setons, or the use of any apparatus such as that recommended by Dr. H. H. Smith.

The advantage of the semi-prone position of the forearm in the treatment of these injuries, as affording the best possible security for the keeping of the bones in their proper relation until union shall have occurred, does not seem to me to have been duly appreciated by those who have

written on the subject. It can be insured by adding to the palmar splint (of whatever form this may be) a portion to extend half way up the inner side of the arm, with a right angle at the elbow.

CASE II. *Thumb*.—Adolph R., æt. 3, was brought to me in December, 1872, with an ununited fracture of the first phalanx of the right thumb, near its distal end. The bone had been broken two years previously, by a heavy water-closet lid falling on it. The family physician, who first saw the case, thought the injury was only a severe bruise. A week or more afterwards, the child was taken to a distinguished surgeon, who detected the fracture, and endeavoured to keep the fragments at rest by making the sound part of the hand act as a splint. This plan, however, proved inadequate—as indeed might have been expected of any other, the smallness of the member, and the restlessness of so young a child being considered; and no union whatever took place.

When I saw him, the little fellow was able to grasp any object quite readily, but the part of the thumb which he opposed to the fingers in so doing was the side of the upper fragment of the phalanx, the distal portion swaying away quite loosely. It was obvious that as the child grew older, not only would the usefulness of the hand be affected, but the deformity would become so marked as to be a source of mortification to him; and hence it was very desirable to obtain consolidation of the bone. As a regular false joint seemed to have been formed, it seemed vain to expect anything from mild measures, which however were tried, without result.

I therefore determined, first, to have a splint made accurately fitting the thumb, and to accustom the child to wearing it; secondly, to irritate the ends of the fragments by an operative procedure; and finally, to keep them approximated, in the hope that they would unite.

Several experiments were made before I could get a suitable apparatus. At length I had a plaster cast made of the thumb, and on this Mr. Kolbe, the well-known instrument maker of this city, moulded a sheet of gutta-percha, so as to inclose the outer portion of the thumb, from the wrist to the tip; a soft piece of buckskin was next arranged like the hand-part of a glove, with a lacing at the back, the thumb-portion fastening around the thumb with a narrow strap and a little buckle. A very small piece of gutta-percha was sewed into this strap so as to make counter pressure at the ulnar side of the thumb, just over the ends of the fragments. For the sake of cleanliness, two splints were made, to be worn alternate days.

No difficulty was experienced in getting the child to wear this, and he became so used to it that he did not even play with it, as at first he was inclined to do.

On the 13th of April, Dr. Sinkler having given the child ether to the first stage of insensibility, I introduced a broad cataract-needle at the ulnar side of the thumb, and getting its blade between the fragments, scored their opposed surfaces. The needle seemed to enter a cavity like that of one of the natural joints. A little bleeding took place, but was soon checked by the application of a little scraped lint and collodion. The splint was at once put on, and kept in place constantly, as before.

No increase of solidity having followed this operation, on the 21st of May it was repeated, the scoring being somewhat more thoroughly done. After this, union of the fragments took place, and in August it was firmly established; but as a matter of precaution the splint was kept on until

October, when the thumb showed nothing abnormal, except a very slight prominence at the ulnar side. Its motions were perfectly free, and the child was beginning to use it naturally, opposing its tip to the other fingers in grasping objects.

I am aware of no recorded case of non-union of fracture of so small a bone, and of very few in any part of the skeleton at so early a period of life as this one. Malgaigne merely mentions that he saw one in a girl of 3 years, the humerus being the bone affected; and Norris quotes in his tables the case of a boy aged 5, in whom union failed to occur after fracture of the leg.

ART. XII.—*Bromide of Potassium in the Treatment of Amblyopia Potatorum.* By CHARLES S. BULL, M.D., Ophthalmic Surgeon to Charity Hospital, Microscopist to the Manhattan Eye and Ear Hospital, N. Y.

It is well known that the treatment of amblyopia, occurring in persons addicted to strong drink, is by no means always successful, and this is particularly so in those cases where there is no pathological change visible with the ophthalmoscope in the optic nerve or retina. Many cases will get well if the habit of drinking be given up, and some tonic medicine be administered. Others, again, do not recover their failing vision even when these directions are complied with, but do improve, some gradually, others rapidly, when strychnia is administered hypodermically. There are, however, still other cases which do not improve under this treatment—and, in fact, the vision grows worse, either owing to the inertness of the drug in these cases, or else to the long postponement of its action. In these cases there are generally some other symptoms of chronic alcoholism, such as insomnia, obstinate dyspepsia, and muscular tremors; and here I have had some excellent results from the internal administration of the bromide of potassium. Of course, we all recognize the efficacy of strong doses of this drug in the treatment of the nervous phenomena occurring in alcoholism; and Galezowski, Macnamara, and Quaglino have proved its usefulness in amblyopia *ex abusu*. Though the treatment be somewhat empirical, yet the results obtained are too important to be ignored, and I have come to regard it as a very important adjuvant in the treatment of such cases. Quaglino has used the bromide of potassium in cases of amblyopia potatorum from the beginning of the malady, and has convinced himself that its action is more prompt and decisive than other remedies employed for this purpose, provided the dose be steadily increased, and carried up to toleration. When the dose is increased up to 160 or 200 grains daily, he thinks it exerts a depressing

action upon the brain and spinal cord, which is manifested by a sense of weight in the head, weakness of memory and intellect, approaching fatuity, and great tendency to coma. At the same time there is more or less difficulty in voluntary movements, so that the patient becomes lazy, and occasionally the gait becomes a stagger. These symptoms disappear when the dose is diminished or stopped. Quaglini commenced with 15 or 30 grains daily, dissolved in from 4 to 6 ounces of water, and divided into three doses; and this dose was increased by 15 grains daily until the patient complained of fatigue in the legs, excessive somnolence, some difficulty in speaking, and weakness of memory. These symptoms, I have found, usually occur when the dose has been increased to three drachms daily, though they may not appear till four or even five drachms have been administered. Quaglini states that after his patients had taken 5ij or 3iiss of the drug, what he calls the "nervous irritation" of the retina diminished, and the vision became clearer; and this was particularly so for objects situated at some distance. As the dose was increased, printed characters could be more easily discerned; and, finally, in cases which were not very grave, the patients could read and distinguish minute objects. He found that even in inveterate cases which had lasted some time, the malady was usually arrested, though there was not generally any increase in the acuity of vision. This was probably owing to a more or less complete atrophy of the optic nerve fibres from hypertrophy of the connective tissue of the nerve. My experience in these cases has been very nearly the same as that of Quaglini. I have usually commenced with moderate doses—say ten grains three times daily—and have increased each dose by five grains till the patient began to show some of the toxic effects. When this point is reached it is better to omit the drug entirely for a few days, and then recommence with a somewhat smaller dose than the highest one reached, and gradually diminish the daily amount until we can discontinue the use of the remedy altogether. Of course, the use of any alcoholic drink or of tobacco should be strictly forbidden; and, generally speaking, the patients follow the directions given them very faithfully.

I have not yet employed this method of treatment in all classes of cases of amblyopia *ex abusu*, but have confined it to those in which the ophthalmoscope shows no sign of any change in the optic nerve, other than a slight amount of congestion. But the more cases of alcoholic amblyopia I see, the less reliable does the vaunted strychnia appear, and in this article I take the opportunity of modifying a second time my statements in regard to the use of strychnia in affections of the optic nerve. I believe that in cases where an atrophic degeneration exists in the nerve structure, from whatever cause this may proceed, strychnia is by no means so sure a remedy as has been supposed, and that we should come to look upon it certainly as a remedy to be employed, but by no means one always to be relied on. I do not think it possible to classify these cases of amblyopia

ex abusu in such a manner as to be able to say exactly in what cases any particular form of treatment is indicated. Nor do I wish to be understood as making the same vaunt for bromide of potassium as a remedy in these cases, as has been made for strychnia. They are both indispensable, and should always be employed. I have not been able to satisfy myself of the effect produced on the central retinal vessels by the bromide of potassium, as claimed by Lewiski, and confirmed by Allbutt in two cases. The former says he recognized a perceptible narrowing of the calibre of the retinal vessels, but does not say whether in the arteries, or veins, or both. He describes observations made upon vessels in other regions, and shows that the bromide causes a narrowing of their calibre. He trephined the skull of a rabbit to which he had given the drug, and observed the vessels of the pia mater, which, he says, diminished perceptibly in size, and the membrane became quite pale. Now, if it be definitely settled that bromide of potassium really has the power to contract the arterial and venous capillaries of the cerebral membranes, it surely ought to produce the same effect upon the capillaries elsewhere in the body, and among others in the optic nerve. The capillaries being contracted, less blood would flow to the part, and it would become less rosy in hue, and perhaps take on a blanched appearance. Now this is the state of things to be looked for in the optic disks of patients who have been taking the drug, and it is just this point to which my attention has been particularly directed. I have examined every patient carefully to whom the drug had been administered, not only once but repeatedly at every visit, and in only two instances could I detect any perceptible diminution of the central vessels of the retina, or in the capillaries of the optic papillæ. The latter retained their normal, rosy hue throughout, even when the toxic effects had been produced. In the two cases in which I did see the change in the vessels, it appeared in both eyes, and lasted until the dose of the bromide was diminished.

The opportunity for studying the effects of the drug are constantly increasing, for I think that more cases of amblyopia *ex abusu* are seen every year than were observed the year before; and thus it is comparatively easy to corroborate or refute Lewiski's statement.

I have occasionally used the hydrate of chloral in combination with the bromide of potassium, but I do not think that there is any advantage gained in combining the two drugs.

214 WEST FORTY-FOURTH STREET, N. Y.

ART. XIII.—*A Case of Melted Lead in the Ear.* By H. S. SCHELL, M.D., of Philadelphia. (With a wood-cut.)

ON June 23d, 1874, an Irishman, aged 55 years, applied for relief at the Eye and Ear Department of the Dispensary of St. Mary's Hospital. He stated that after returning home fatigued from work, on Saturday evening, three days before, he was lying on the settee with closed eyes, but not sleeping, and while in this position his wife had poured melted lead in his ear. Agonized by the pain, he had sprung up and shaken his head, and some of the lead had rolled out on the floor. In confirmation of his story, he produced some splash-like fragments in a scrap of paper.

I found the skin of the concha and external auditory meatus on the right side deeply burned, and a copious flocculent discharge taking place from the ear. There was a barely perceptible rim of the membrana tympani remaining, and a dark-coloured substance of metallic lustre filled the space beyond, and extended outwards by two projections along the anterior and posterior walls of the meatus. A portion of the handle of the malleus could be seen in front of the body of this mass.

There was complete paralysis of the right facial nerve, and the patient said he had noticed the drawing of his mouth to one side in two or three minutes after he first felt the pain.

The sense of taste was lost on the right side of the tongue, and there was some dryness of the same side of the mouth. There seemed to be no difficulty of deglutition, but the uvula deviated to the left. He complained of constant giddiness. "Everything seemed to be going round," he said. This ear, which had heretofore been his good one, was now entirely deaf. The tuning-fork, placed on the vertex or teeth, was heard in the left ear only.

In the left ear, which had been very deaf for years, the membrana tympani was entire, sunken, and opaque. The loud voice could be heard close to the auricle. There was little or no constitutional disturbance. I took hold of the anterior and posterior branches of the lead, by turns, with a strong pair of forceps, but was not able to move it after repeated efforts, and the forceps finally slipped and came away with the teeth filled with lead.

June 24. In trying to remove the lead, I tore off a piece weighing $1\frac{1}{4}$ grains.

26th. Removed in same way another piece of same weight.

30th. Bony canal of meatus denuded of soft parts. Discharge copious. Foreign body slightly movable in its bed, but cannot be extracted. Ceased all efforts to extract after this, merely directing that the canal should be kept clean by syringing.

July 14th. Granulations springing up around short process of the malleus.

21st. Malleus handle hidden by granulations. Pulsation noticed above.

Aug. 21. Lead entirely concealed by granulations. Removed most of them with the looped forceps, and touched bases with chloro-acetic acid. Complains much of vertigo, which is worse in the evening.

Sept. 7. Is becoming feeble, pulse weak, giddiness very troublesome, optic disks normal. Prescribed tonics.

14th. Better, vertigo felt only when standing or walking.

Nov. 24. More improvement. Vertigo less troublesome. Facial mus-

cles respond feebly to the constant galvanic current. He fainted while I was applying it.

Feb. 23, 1875. The opening of the meatus has become contracted to a line in diameter by cicatricial tissue. A point of lead is visible just inside. Made two incisions through the contracted tissues, and enlarged the opening sufficiently to allow of the extraction of the entire mass. It weighs $18\frac{1}{2}$ grains. The handle of the malleus is partially imbedded in the outer side. The inner is a tolerably accurate cast of the inner wall of the tympanum. A cylindrical projection, $2'''$ long, from the anterior side represents the upper part of the Eustachian tube. Superiorly a smaller part projects towards the tegumen tympani.

26th. Still has some giddiness. Can hear the loud voice close to the right ear, but cannot distinguish words.

April 30. Right ear dry. New membrana tympani formed, of a pearly lustre, and evidently very thin. No response in the facial muscles to the induced current. Became faint under the application. No improvement in taste. Right side of the mouth same as at first, as to dryness. Perceives noises with the right ear, but the tuning-fork on the teeth or vertex is heard in left ear only. Is still giddy.

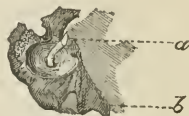
The popular conception of the external auditory meatus seems to be that it is a passage leading directly into the brain or vital organs.

It is but fair to say here, however, that the patient's wife showed much indignation in speaking of her husband's accusation, and asserted that he came home drunk, and after quarrelling with her, took the teapot from the stove to throw at her; that as he raised it above his head, some of the solder, which had melted, dropped in his ear.

The foreign body which so persistently resisted extractive efforts, was evidently raised from its bed and pushed towards the surface by granulations forming on the cicatrizing tissues beneath.

From the condition of the left ear, and the fact that "the right was the good one," it is probable that when the lead was introduced the membrana tympani was entire, but was instantly destroyed by the heat, which was great enough also to disorganize the facial nerve through the walls of the Fallopian canal, to demolish the chorda tympani, and to allow the metal to run down the Eustachian tube for several lines before it became enough chilled to set.

The auditory nerve was at first completely paralyzed, but afterwards regained in some degree its powers. There is a small, ill-defined projection on the inner side of the piece of lead, to correspond with the position of the *fenestra rotunda*, but it is not of such length as would have been requisite to penetrate the *membrana tympani secundaria*. There is, however, a good mould of the promontory, and there must have been sufficient heat transmitted through it to the *liquor cotunii* to destroy the vitality of the organs of Corti.



Outer side of the piece of lead. Actual size. a. Handle of malleus. b. Cast of Eustachian tube.

The auditory tufts of the ampullæ, being further from the source of heat, were probably less affected, and had some chance of recuperation. This may explain the renewal of susceptibility to noises, while there remains an absence of perception of the musical tones of the tuning-fork.

Viewed by the light of the recent experiments of Böttcher of Dorpat, the vertigo can scarcely be attributed to any interference with the function of the semicircular canals. It probably depended at first upon the irritation caused by the foreign body in the middle ear, and later upon the patient's debilitated condition, for which he is still taking tonics.

1004 VINE STREET, PHILADELPHIA, PA.

ART. XIV.—*Action of Medicines on the Urine.* By CHARLES M. THOMPSON, M.D.¹

It was my object in commencing these observations to contribute some additions to the knowledge already possessed as to the normal conditions, composition, etc. of the renal excretion; the study of which is so useful as a prelude to detection of pathological conditions; and by the study of the effects produced by certain drugs on the amount of solids, the reaction and the quantity of urine marking also any constitutional or local effect apart from the action on the urine, to endeavour to throw some light on the vexed question of the action of medicines. Omitting from this paper any of the functions, properties, etc. of urine which are to be found in the ordinary text-books, I will proceed at once to give the results of my researches, only quoting from other writers where comparison is desired.

I. *Analytical Results.*—These were all obtained by the examination of samples taken four times daily, *i. e.*, on rising, about noon, about 6 P. M., and on retiring. The different averages given by the authorities of different nationalities would lead to a supposition that the normal standard in America differs from that of European physiologists somewhat widely, and on that account, as well as for purposes of comparison, I felt considerable interest in the examination of normal urine from which I obtained the following results. To insure accuracy, however, I must state that I am in weight rather under the physiological average, being 120 lbs.; I enjoyed during the experiments good health, had a good digestion, and lived on a plain, mixed diet, seldom taking any fermented drinks, and smoking tobacco in due moderation. Results of 25 observations give—

¹ This paper exhibits the results of experiments and observations on the subject which formed the basis of the author's prize thesis to which the Faculty of Jefferson Medical College, at the termination of the session 1874-75, awarded the "Toner Gold Medal" for "original investigation."

	Quantity.	S. G.	Urea.	Cl.	PO ₅ .	Free Acid.
Max.	f3vij	1034	1080	264	127	98
Min.	f3ijj	1016	640	72	48	20
Avg.	f3vss	1027	853	148	88+	64.5

Yielding a daily average of—

Urine	22 fluidounces.
Urea	18,766 milligrammes.
Cl	3256 “
PO ₅	1952 “

Remarks.—The figures under the heads Urea, Cl, PO₅, and Free Acid indicate milligrammes per f3j of urine. Owing to the slightly alkaline or neutral reaction on two occasions, the average of free acid was only obtained from 23 observations.

Results under gr. v thrice daily of potassium bicarbonate—23 observations:—

	Quantity.	S. G.	Urea.	Cl.	PO ₅ .	Free Acid.
Max.	f3vij	1036	2600	228	210	196
Min.	f3iiss	1024	720	62	48	19
Avg.	f3ivss	1030	2230	164	99	83+

Yielding a daily average of—

Urine	18 fluidounces.
Urea	40,140 milligrammes.
Cl	2955 “
PO ₅	1506 “

Remarks.—Twice the urine presented an alkaline reaction, therefore the average of free acid is that of 21 samples. The very high sp. gr. 1036 occurred twice, once in the evening and once in the morning; as the density is unusual I append here the analysis obtained:—

	Quantity.	Urea (per 3j).	PO ₅ (per 3j).	Cl (per 3j).
1st sample . . .	f3ijss	1320 m'gms	96 m'gms	153 m'gms
2d sample . . .	f3vj	2320 “	112 “	140 “

The first sample acid; the second, strongly so, in reaction.

Results under gr. x potassium iodide thrice daily (24 obs.):—

	Quantity.	S. G.	Urea.	Cl.	PO ₅ .	Free Acid.
Max.	f3ix	1032	2720	279	112	158
Min.	f3iv	1020	640	24	54	30
Avg.	f3vj	1027	1072	106+	74+	98+

Yielding a daily average of—

Urine	24 fluidounces.
Urea	25,728 milligrammes.
Cl	2544 “
PO ₅	1792 “

Remarks.—The reaction was neutral in one sample.

Urine under influence of potassium bromide taken gr. x thrice daily gave the following results (from 16 obs. extending over a week):—

	Quantity.	S. G.	Urea.	Cl.	PO ₅ .	Free Acid.
Max.	f3xj	1032	1920	48	240	160
Min.	f3ij	1010	240	12	88	56
Avg.	f3vj	1022	1082.5	24	126	95

Yielding a daily average of—

Urine	24 fluidounces.
Urea	25,980 milligrammes.
Cl	384 “
PO ₅	2016 “

Remarks.—Twice the reaction proved neutral, once it was alkaline.

Results under gr. ij thrice daily of quinia (23 obs.) :—

	Quantity.	S. G.	Urea.	Cl.	PO ₅ .
Max.	f3xvj	1030	1360	81.6	344
Min.	f3iv	1008	400	14.4	72
Avg.	f3viiij	1020.5	927	29.5	187.5

Yielding a daily average of—

Urine	32 fluidounces.
Urea	29,663 milligrammes.
Cl	994 “
PO ₅	6000 “

Remarks.—The reactions under quinia presented wide variations—on 7 occasions it was neutral to litmus. The 16 other samples were thus divided :—

	Max.	Min.	Avg.	
11 Alkaline	278	31	157.4	{ Milligrammes of free alkali.
5 Acid	68.8	29.4	47.7	{ Milligrammes of free acid.

Results under ammonio-citrate of iron taken in gr. x doses thrice daily :—

	Quantity.	S. G.	Urea.	Cl.	PO ₅ .
Max.	f3viiij	1032	1360	63.4	392
Min.	f3iiss	1014	1120	22	288
Avg.	f3v	1023	1453	36	344+

Yielding a daily average of—

Urine	20 fluidounces.
Urea	29,060 milligrammes.
Cl	720 “
PO ₅	(about) 6682 “

Remarks.—These are somewhat incomplete, though, as they extend over a week, as do the rest, I do not hesitate to include them. Quantity and sp. gr. I obtained from 12 obs., urea 6, Cl and PO₅ each 10. The reactions, owing to my being unable to test immediately on account of other engagements, I could not rely on, in view of the early fermentative changes of the hot August weather; therefore they are entirely omitted.

In my thesis I placed three diagrams showing the ranges of specific gravity and quantity, but as they can well be dispensed with here I shall

not include them, merely mentioning that they showed that the statement as set forth in some text-books, that specific gravity is in inverse proportion to quantity, does not always hold : *e. g.*, under pot. bicarb. one sample gave, quantity, $\bar{5}ij$; specific gravity, 1036 ; another gave, " $\bar{5}ij$; " " 1026 ; again under potas. iod. " $\bar{5}vij$; " " 1032 for one sample ; for another " $\bar{5}vss$; " " 1022 ; and others might be cited.

II. *Comparisons.*—I now come to the second head or division of my paper, which I shall, however, enter upon but briefly, giving, instead of lengthy comparisons by quotations from standard authorities, a table, which at a glance will show the results of my observations, and render any desired comparison or deductions perfectly easy to the reader.

Table of Comparison.

Quantity.		S. G.	Urea (pr. $\bar{f}3j$ urine.)	Cl (pr. $\bar{f}3j$ urine.)	PO ₃ (pr. $\bar{f}3j$ urine.)	Acid (pr. $\bar{f}3j$ urine.)
"Normal"	Max. $\bar{f}3$ 8	1034	M'gms. 1080	M'gms. 264	M'gms. 127	M'gms. 98
	Min. " 3	1016	640	72	48	20
	Avg. " $5\frac{1}{2}$	1027	853	148	88	64.5 ¹
Under Pot. Bicarb.	Max. " 8	1036	2600	228	210	196
	Min. " $2\frac{1}{2}$	1024	720	62	48	19
	Avg. " $4\frac{1}{2}$	1030	2230	164	99+	83+ ¹
" " Iod.	Max. " 9	1032	2720	279	112	158
	Min. " 4	1020	640	24	54	30
	Avg. " 6	1027	1072	106+	74	98+
" " Brom.	Max. " 11	1032	1920	48	248	160
	Min. " 2	1010	240	12	80	56
	Avg. " 6	1022	1082.5	24	126	95 ¹
" Quinia	Max. " 16	1030	1360	81.6	344	68.6
	Min. " 4	1008	400	14.4	72	29.4
	Avg. " 8	1020.5	927	30	187	47.7 ¹
" Iron	Max. " 8	1032	1360	63.4	392	} See Notes, Part I.
	Min. " $2\frac{1}{2}$	1014	1120	22	288	
	Avg. " $5\frac{1}{2}$	1023	1453	36+	344+	

I shall, however, briefly take up the three more important items ; quantity, specific gravity, and amount of urea excretion, leaving the other constituents to the table solely.

Quantity.	
Dalton, from 18–20 to 45–6 $\bar{f}3$	average $\bar{f}3$ 35
Parkes and Ed. Smith (healthy males, age 20–40)	" 52 $\frac{1}{2}$
Prout	" 35
Böcker	" 81
Gross, Prof. S. D., from 32 to 45 $\bar{f}3$	" 38
Own, normal	" 22
" under pot. bicarb.	" 18
" " iod. and brom.	" 24
" " quinia	" 32
" " iron	" 20

¹ For particulars of reaction see "Analytical Results" (Part I.).

		Specific Gravity.			
Dalton,		from 1030 to 1020-17	.	.	average 1024
Prout,	summer, 1025 ; winter, 1015	.	.	.	" 1020
Gross,		from 1020 to 1015	.	.	" 1017.5
Own, normal		" 1034 " 1016	.	.	" 1027
"	under pot. bicarb.	" 1036 " 1024	.	.	" 1030
"	" iod.	" 1032 " 1020	.	.	" 1027
"	" brom.	" 1032 " 1010	.	.	" 1022
"	quinia	" 1030 " 1008	.	.	" 1020.5
		Urea.			
Lehmann (see Dalton)		.	.	.	average for healthy male per day 32.2
Bischoff (over average weight)		.	.	.	average " 35.5
W. A. Hammond	(weight about 205 lbs.)	.	.	.	" " 43.5
J. C. Draper		" " 145	"	.	" " 27.6
Myself, normal		" " 120	"	.	" " 18.76
"	under potassium bicarbonate	.	.	.	" " 40.22
"	" iodide	.	.	.	" " 25.72
"	" bromide	.	.	.	" " 25.96
"	quinia	.	.	.	" " 29.66
"	iron	.	.	.	" " 29.06

The results of these comparisons are :—

1st. As to quantity, my range, being 18 to 32 fluidounces per day, is under that of other observers ; Prout, whom Carpenter quotes as minimum, giving 35 fluidounces, and Böcker (Carpenter's maximum) giving the very high figure of 81 fluidounces per day.

2d. As regards specific gravity, my range, 1020.5 to 1030, is higher than that of the authorities quoted ; indeed, with the exception of Dalton, my minimum average, 1020.5, obtained under quinia, exceeds the average of all others, whilst 1030, my average under pot. bicarb., is a figure given by Dalton as occasionally attained, but is 6 above his average.

On two occasions the specific gravity under pot. bicarb. was 1036, which is remarkably high, equalling that given by clinical authorities for diabetes mellitus, whilst under quinia, on one occasion the specific gravity (=1008) was so low as to correspond with that of a case of diabetes insipidus, mentioned by Prof. Flint in his work.

3d. The urea excretion, weight being duly considered, did not, it will be seen, differ widely from the quotations given of observations by others, the range being if anything somewhat higher.

I shall now pass on to the 3d division of my paper, the action or effects (apart from the urine) of the drugs taken.

III. *Independent Physical Effects.* — Potassium bicarbonate: No marked effect ; the water in which I took it seemed, however, to quench thirst better in the hot weather than pure water.

Potassium iodide: Commenced June 14. June 15, throat, fauces, etc. somewhat parched on rising ; later in day, mouth sore, huskiness or partial aphonia, increase of nasal mucous secretion. June 16, above symptoms continued ; peculiar hyperæsthesia of face developed. June 17,

Buccal symptoms diminished; tenderness of face increased; stiffness of masticatory muscles marked, and feeling much simulating that experienced after a shave, on motion of the jaws; appearance of the well-known eruption manifest. After this date no further symptoms, and gradual disappearance of the above-mentioned.

Cinçifnga: I commenced this drug in ʒss doses fluid extract, but after three doses experienced such disturbance of the bowels and headache as to induce me to give it up. Being well previous to its exhibition and after its effects had disappeared, I am compelled to look upon the diarrhœic disturbance and cephalalgia as the true physiological action of the drug (and, indeed, this partially agrees with Prof. Biddle's mention of the drug in his work), or think there exists on my part a strong idiosyncrasy.

Potassim bromide: About the 4th day slight heaviness and sleepiness, which was, however, temporary.

Fowler's solution: This drug I had to give up in a short time owing to the nausea, etc. produced by $\text{m} 13\frac{1}{2}$ thrice daily, diluted.

The other articles had no effect noticeable.

This brings my paper to a conclusion, and I will only add, I hope it may not prove entirely without value as an addition to the researches in that wide and interesting field of study—physiological chemistry.

ART. XV.—*An Improved Method of Applying the Artificial Leech.* By SAMUEL THEOBALD, M.D., Ophthalmic and Aural Surgeon to the Baltimore Charity Eye and Ear Dispensary.

'Tis too often a fatal objection to many of the so-called improvements in surgical methods or appliances that, though the modifications proposed do, perhaps, in themselves, possess certain positive advantages, these are more than counterbalanced by the sacrifice of simplicity which is involved in their adoption. The advantage gained, it is true, may often outweigh the disadvantage, but it will hardly be claimed that, in the experience of the surgeon, such is usually the case. On the other hand, such modifications as possess no other merit than that of rendering that which before was complicated, less so, can be rightly called improvements.

A modification of the usual method of employing the artificial leech which I have recently, with most satisfactory results, adopted in practice, and which I desire to bring to the attention of the medical profession, may, I think, be regarded as a real improvement, since, while it possesses several decided advantages over the old method, it is also unquestionably a simplification of it.

The use of the artificial leech, as at present in vogue, it will not, I

think, be denied, is open to several grave objections. In the first place, and most important, it frequently happens that we are unable, even with the greatest care and patience, to abstract as much blood as we should desire. After the removal of one, or at most of two cylinderfuls of blood, the mouths of the divided vessels and the wound itself become obstructed by coagulum, and no amount of suction will suffice to cause the blood longer to flow. Again, the incision made by the scarificator often leaves a permanent scar; and since it is usually in ophthalmic practice that the artificial leech is employed, and under such circumstances it is generally applied to the temple, this is very frequently by no means an inconsiderable objection. The desirability of overcoming these defects more than once occurred to me, and at last, by accident, a possible method suggested itself.

I had often noticed—and who that is accustomed to shave himself has not—how the most superficial “nick” will frequently give rise to the most astonishing amount of hemorrhage, which it sometimes baffles one’s ingenuity and tries one’s patience to check. Such a wound, of course, leaves no scar; and most fortunate is it, from a cosmetic point of view, that it does not. Briefly, then, the idea suggested itself to me that such a superficial incision might be substituted, with advantage, for the circular linear cut made by the scarificator. At once the idea was put to a practical test, and the result obtained fully satisfied my expectations.

At first I simply pinched up a fold of skin between the thumb and forefinger, and, with a sharp knife—a Græfe’s extraction knife I found most convenient—“nicked out” a little thin disk, about 3 mm. in diameter, involving the epidermis and the superficial layers of the cutis vera; the suction cylinder was then employed, as usual. Subsequently, however, I found it more convenient, and also less painful to the patient, to substitute for the fingers a pair of dressing, or other suitably shaped, forceps. Since first making the experiment, I have repeated this method of applying the artificial leech sufficiently often to enable me to speak positively regarding the advantages which it possesses; and these are:—

1st. A greater quantity of blood may be obtained than by the usual method. This is probably attributable to the fact of the coats of the vessels being, in many instances, cut obliquely or but partially severed; and also to the character of the wound, which does not facilitate the formation of coagulum, as the deep linear wound, made by the scarificator, does; the edges of which at once fall together, and may even be forcibly compressed by the action of the cylinder. It is not claimed that the blood will flow more rapidly, at least during the earlier stages of the operation, but that the flow is more persistent.

2d. No scar is left. Of course, if the cut is made sufficiently large and deep, a scar may be produced; but this need never occur.

3d. It is not so painful; and the procedure is less calculated to alarm

the patient. Many timid subjects would submit to a trifling "snip" with a knife, though it would be a fruitless task to attempt to persuade them to allow you to spin a top, with a sharp edged peg—so to speak—upon their temple.

4th. And last, though by no means least important, the method is more simple. The need of having a scarificator is done away with, and thus the cost of the instrument reduced at least one-half.

Since, or rather while writing the above, it has occurred to me that the efficiency of the artificial leech might be vastly increased, could we, by some available means, prevent or retard the plugging of the small vessels by coagulum; which, in the use of this instrument, tends to check so quickly the flow of blood. How effectually this may be accomplished, the after-bleeding of the bite of the real leech shows. The remarkable behaviour of the leech-bite, in this respect, is not, I think, attributable to the shape or character of the wound, but is, in all probability, due to the presence of a secretion which, ejected from or exuding from the mouth of the leech, has the property of preventing the coagulation of the blood. I am not aware that any investigations have been made in this direction, but, could we determine the nature of this secretion, it would in all probability enable us to imitate artificially, with more perfect success, this time-honoured and most efficacious method of accomplishing local depletion.

With the view of ascertaining what influence some of the substances, which are known to prevent or retard the coagulation of blood, would have in promoting hemorrhage from a wound, such as I have suggested for the artificial leech, I made, a few days since, a number of nicks, as nearly alike as possible, with a sharp razor, into the skin of my fingers, and applied to the different wounds a drop of one of the following solutions—each being of the strength of $\mathfrak{5j}$ to aquæ $\mathfrak{5j}$ —ammon. carb., ammon. muriat., liq. ammon. fort., sodæ carb., sodæ bicarb., potas. carb. Besides these I applied to one a weak solution of liq. potassæ in water, to another soap, and to two others I made no application, reserving them for comparison. The influence of the ammonia solutions, more especially of the ammon. carb. and of liq. ammon., in retarding coagulation and promoting the flow of blood, was unmistakable;¹ the others seemed to exert but little influence. Some smarting, of only momentary duration however, followed the applications; and the wounds to which the solutions were applied healed as readily as the others.

It is a point of exceeding interest and of therapeutic value, to determine to what extent we may be able to intercept nature in her efforts to

¹ This result accords with the views advanced, several years since, by Dr. B. W. Richardson, regarding the cause of the coagulation of blood upon exposure to the atmosphere. He maintained that it took place in consequence of the loss of ammonia.

arrest the flow of blood from divided vessels; this, however, can only be done by further and more elaborate experiments, which I trust the suggestions thrown out in this paper may call forth.¹

BALTIMORE, April, 1875.

ART. XVI.—*Case of Tumour of the Pons Varolii.* By V. P. GIBNEY, A.M., M.D., Assistant Surgeon to the Hospital for the Ruptured and Crippled, New York.

ON the 23d of April, 1874, Samuel T., aged $6\frac{1}{2}$ years, of German parentage, staggered into my office, assisted by his mother and a sister. The general appearance was one indicative of intracranial lesion. There was apparent exophthalmos, ataxic movements of the head, and a look of profound stupidity. No marked emaciation, no febrile symptoms, and nothing specially characteristic of actively progressive disease. He stood unassisted, and resisted considerable pressure on shoulders, showing absence of any paralysis of the lower extremities. Grasp was pretty firm, and further examination enabled me to exclude any paralysis of the upper extremities. All the movements of the eyeballs were executed slowly, yet with comparative ease. No paralysis of facial muscles or of the tongue; no deviation of uvula; no marked derangement of vision or of hearing.

That which most attracted my attention was the notable motor ataxia. On standing he involuntarily inclined the head and body in divers directions. When he attempted to walk, he ran with the body projected forwards; nor were the limbs thrown about as in locomotor ataxia. His gait was that of an intoxicated person. There was a similar irregularity in the movements of the upper extremities. Speech slow and unintelligible, a few words being pronounced with ease, while longer sentences were jerked out "as from the pit of his stomach." No derangement of general sensibility. Head, thorax, and spinal column examined with negative results. An ophthalmoscopic examination was at the time impracticable, hence this was deferred till a better opportunity should offer.

Previous history briefly as follows: Health and general condition prior to November, 1873, excellent. Paternal and maternal family histories good. While at school during the latter part of November, he fell from a bench, striking the occiput. Headache for a day or two was the only symptom immediately following the fall. Two weeks subsequently slight irregularity in his gait, and soon the children jestingly charged him with drunkenness. Restlessness during sleeping hours supervened, and for weeks this, together with headache and motor ataxia, were the chief

¹ I have, within the last few days, twice used the carbonate of ammonia solution in applying the artificial leech. After making the incision in the manner I have recommended, I applied a drop to the wound, and, also, as suggested by my friend, Dr. Russell Murdoch, dropped a small quantity of the solution into the cylinder. The flow of blood in each instance was exceptionally free, and there was not the usual tendency to the formation of a clot in the cylinder.

symptoms observed. No febrile reaction, no nausea or vomiting, no constipation. Towards the close of January his speech became indistinct, and, in the language of his mother, "he screamed his words." With this came also a defective memory.

With such a history, and the symptoms present on application, he was admitted to the hospital, and treatment begun for tumour in the cerebellum. The iodide of potassium, in large doses, was the principal drug administered. Subsequent history as follows:—

April 14. Little or no change noticed other than heavy breathing during sleep; capriciousness of appetite, and an occasional involuntary passage of urine. The vital signs were normal.

16th. Epistaxis, which, however, was easily controlled. Vital signs still normal.

19th. During the last three days the rectal temperature has been taken, but not the slightest febrile symptom is indicated. Pulse and respiration likewise normal. This evening he lies drowsily, while the ataxic movements of lower extremities are well marked. When he attempts to sit up in bed he reels from side to side. Scleral conjunctiva anæsthetic. No change in pupils, no extra tension of the globe. Appetite good.

22d. Left pupil dilated.

May 2. Vomiting this morning, for the first time during his illness. This evening his pulse 90, and intermittent; respiration 20, and laboured; temperature normal. Failed for the first time to recognize his parents. A visit from my friend, Dr. Charles S. Bull, this evening, was made the occasion of an ophthalmoscopic examination. Right eye: congestion of optic nerve; left, descending neuritis going on to progressive atrophy; arteries diminished to threads; veins enlarged and tortuous; pupil much dilated.

5th. A few stellar phosphates found in urine. Refuses to eat any solid food—due, probably, to paresis of facial muscles.

8th. Has been in a state of semi-coma for twenty-four hours. Pulse 90, and intermittent.

9th. At 6 o'clock A.M., stridulous breathing and excessive restlessness. Dark, fetid discharge per rectum. At 7 o'clock these symptoms disappeared; at 10 o'clock returned, and death by apnoea speedily followed.

Autopsy twenty-four hours after death, Dr. E. G. Janeway supervising: On opening calvarium nothing special noticed; sinuses and contents thereof normal. Brain seemed rather large for cranial cavity. No sub-arachnoid serum on convexity; only a trifling amount at base. Appearance of cerebral tissue normal. Cavity of lateral ventricles found unusually large for a child of this age; the quantity of serum greater than normal. Optic thalami and corpora striata normal, while the velum interpositum appeared a little tighter stretched than is usual over the tubercula quadrigemina and third ventricle. Tubercula quadrigemina much smaller than usual, and seemed pushed upward and flattened. The processus-c-cerebelload-testes seemed stretched by something beneath them. All the anterior portion of the fourth ventricle found occupied by a rounded swelling of pons, which, on right side, seemed slightly elastic; left side a little firmer in consistence. From the under surface of the pons the enlargement found about equal on both sides, with the depression deeper than normal, and the basilar artery traversing this depression in an unusual state of tension. A section through right side presented a sort of grayish-white colour, mottled here and there with a preponderance of white. On

scraping with scalpel a little thin fluid was obtained, viscid in character, and coagulable on the addition of acetic acid. Medulla apparently normal; the anterior pyramids, however, at entrance of pons seemed abnormally elevated, with the point of entrance also deeper than is normal. The fibres of anterior pyramids easily traced through pons, section being made longitudinally on the left side. The usual gray matter was not made out, the whole substance being taken up by the above-described grayish-white gelatinous material. On transverse section transverse fibres not readily discernible. Size of the pons two inches long, two inches and a half wide, one and a half in thickness. A section under the microscope showed a great number of small round cells, occasionally polygonal in shape, with granular matter between. The neuroglia was increased, while the nerve-cells, though perfect in form and appearance, were sparsely scattered over the specimen. Dr. Bull very kindly examined the optic nerve and chiasm, which furnished an excellent example of neuritis with hyperplasia of connective tissue and cells, and, in places, a consecutive atrophy of the nerve-tissue. The neuroglia was thickened and hypertrophied, but the most marked appearance was the enormous number of the exudation-cells of inflammation, round and fusiform, scattered all through the nerve and the chiasm. The outer sheath of the nerve was not much thickened, but the inner was markedly so. There was no deposit of pigment, though the bloodvessels were increased in size and number.

400 LEXINGTON AVENUE, NEW YORK.

ART. XVII.—*Chloroform used to Facilitate Robbery.* By W. H. DEWITT, M.D., Assistant Physician to Longview Asylum, Ohio; late Resident Physician to the Cincinnati Hospital.

ATTENTION for some time has been directed to various statements of opinions regarding the administration of chloroform for the purpose of robbery. Sceptical myself upon the success of its influence, this subject has been one of some interest; and as the question yet remains *sub judice*, the following instance of its use may be of interest to the profession. In order to present the facts the more clearly it will be necessary to enter into detail. A family composed of seven persons (with all of whom I am personally acquainted) retired, as usual, one night in October. The family usually arose about six in the morning, but on this occasion *all* slept until a late hour, when one of them was awakened by the sun shining in through the shutters. Her first impression was the presence of some disagreeable odour in the room, and this impression becoming stronger on arising, she exclaimed, "Some one has had chloroform in this room!" Her husband languidly responded, "You know there is none in the house." Her impression was soon confirmed; for, upon opening the door to the adjoining room, she saw the remains of a lunch taken from the pantry, and left by

the night's guests. All was dire confusion, clothes from the rooms above being found in all directions.

Unable to arouse the family above by their calls, they proceeded to them. On arising, the beds in three separate rooms were found to contain balls of cotton, on which the *fumes* and *recent* presence of chloroform was evident to all. One room was occupied by two young men of about twenty-one and twenty-four years, another by the domestic, a healthy German girl, and the third by the two daughters (young ladies). These rooms were separated by a hall. The beds of the young ladies and domestic were so closely approached that drops of tallow from a lighted candle were found on them. The entire house had been visited. The main house was accessible on entry, but the wing proved a barrier, surmounted by cutting the shutters (outside) introducing the hand to raise the lock, then entering. That a complete investigation of drawers, closets, etc., had been made was evident from all their available contents having been appropriated. Nor did the robbers seem to have feared detection in their visit. Entering, as they did, through the cellar, traversing up the cellar steps to the kitchen, thence up a back stairs and hall uncarpeted, visiting the two sleeping rooms on this hall, up two steps into the front part of the house, *some* noise must have resulted. Now in consideration of the fact that some members of this family were light sleepers (always before aroused by the slightest noise), the successful use in this case is not only *possible* but highly *probable*.

That chloroform *was* used admits of no doubt, as all the balls bore its fumes. The question arising is, Was the sleep produced by the chloroform or merely natural? As they had never all, or any one, slept so late, does it not seem probable that the sleep was prolonged by this agent? The burden of evidence rests with the opinion of its success; and this evidence is *strengthened* and confirmed by the feelings of three of the family for some time after arising. Their feelings, as they themselves described them, were those we often meet with arising from chloroform inhalation. None of these three persons had used it or seen it administered, and the sick sensation and headache were unusual with them. From minor facts, uninteresting in this article, it is evident the robbery occurred early in the morning.

Much of my former scepticism has vanished since investigating this case in all its minutiae. Taking all the facts into consideration, one is very strongly impressed with the belief that the members of this family were stupefied and rendered partially unconscious by the inhalation of chloroform placed in their room.

ART. XVIII.—*Penetrating Incised Wound of Thorax and Liver; Large Abscess of Liver opening into Right Pleura; Evacuation by Operation through Intercostal Spaces; Recovery.* By A. B. ISHAM, M.D., Cincinnati, Ohio.

IF immediate fatal hemorrhage and shock be escaped after penetrating wounds of the chest and liver, and the location of the injury permits of drainage, recovery occurs in a respectable proportion of cases. Military, and also civil surgery, furnish many recorded instances of gunshot wounds penetrating either or both these regions, and also of incised wounds confined to either; but after much search I have succeeded in finding only two cases where both the chest and liver were involved in an incised wound. Both ended in recovery, and one is recorded in *The Medical and Surgical History of the War of the Rebellion, Part First, Surg. Vol.*, pp. 468-9. It is referred to here for many similarities of relation it bears to a case to be presently presented, which forms the basis of this paper.

Abscess of the liver, however, of traumatic or idiopathic origin, particularly when implicating a large portion of the parenchyma of the organ, is a much graver lesion than textural injury without a pus secreting cavity. This is sufficiently demonstrated by a consideration of the difficulties in the way of diagnosis, the tendency to invade other parts, and the dangers of evacuation when deep seated.

Every case, therefore, of abscess in this situation should be well reported and is worthy of attention. The following case, from the impossibility of draining through a chest wound anteriorly, with a dorsal decubitus, from the early closure of the incision through the costal and likely also the diaphragmatic pleura, is resolved into one of hepatic and subdiaphragmatic abscess with exit into the pleural cavity.

In the forenoon of February 2, 1875, I was called to attend Thomas Wright, English, æt. 28. He had been engaged in trimming a tree, and a ladder upon which he was perched, about fifteen feet from the ground—with a footing upon a frozen, icy surface—slipped, letting him fall, his breast striking upon a pruning knife hung point upwards on a limb about four feet below his position at the time of falling.

I found him prostrated, cold, livid, and almost pulseless, with a wound commencing about an inch below the lower point of the sternum, in the median line, and extending obliquely upwards and outwards to about the fourth rib, at a point on a line with the nipple, about an inch to the right of the sternum. The common attachment of the seventh and eighth, the attachment of the sixth, and half of the attachment of the fifth ribs to the sternum had been severed; the pleural cavity was opened, and the knife had penetrated through the diaphragm into the liver. Air and blood were freely passing out at the wound with each act of respiration. I simply closed the opening with adhesive strips and a bandage, applied warmth, administered stimulants, and when he had rallied a little, had him conveyed to his home, a quarter of a mile distant. In the evening

I again visited him, Dr. Keyt accompanying me, when we removed the dressings and placed the surfaces in secure apposition by means of sutures. He appeared exsanguine, had a thready pulse, and the prospects of his seeing the light of morning were exceedingly faint. The vigorous alcoholic stimulation was directed to be continued, and the morning dawned upon a tolerable reaction. From this time until the 14th his condition was rather more favourable; he took nourishment very well, and under the use of morphia was fairly comfortable. On the 14th pleuritis, pneumonitis, and hepatitis set in as evidenced by friction, crepitation, and tenderness over the region of the liver. Pulse 146 and feeble; continuous vomiting and retching. The gastric disturbance was purely reflex, and not dependent upon over use of spirits, as at this time brandy was only sparingly used. Free administration of liquor was resorted to, and quinia in two grain doses every three hours. By the morning of the 15th the stomach had lost its irritability. On the 17th a lump as large as a good sized fist presented in the right hypochondrium principally, but extending also into the epigastrium. It was firm, painful, and close up to the abdominal wall. Poultices were applied until the 24th, when a puncture was made with a hypodermic syringe and a few drops of bloody serum drawn off. In a few days thereafter the induration disappeared, and tenderness in the region of the liver in a great measure subsided. March 2d profuse perspirations and hectic fever commenced, and his pulse, which since the 20th of February had ranged from 120 to 125, rose to 138. The quinia, which had been suspended for a few days, was again ordered in two grain doses every three hours. March 4th there was pneumonic consolidation at the base of the right lung (which had existed since the development of the pneumonia), with area of dulness but no flatness, and pleuritic friction sounds could be heard at the upper portion where the resonance was good. On the 8th redux crepitation and friction sounds were audible at the base. On the 9th was developed compression of the entire right lung, absolute flatness, absence of all pulmonary murmurs, bulging of the side below the sixth rib, fulness of intercostal spaces, and displacement of the heart to the left. In the light of all the symptoms my conclusion was that an abscess of the liver had broken through into the pleural cavity. Between the eighth and ninth ribs, midway between the spine and sternum, there was some œdema, the tissues pitting slightly on pressure. This point, after a consultation with Dr. Keyt, was decided upon as the place for puncture, and accordingly I there entered the needle of an improvised aspirator. One quart of chocolate-coloured pus was obtained, after which a solution of $\mathfrak{z}\text{j}$ tr. iodine to Oj water was injected and drawn off. On the 16th I drew off again with the aspirator forty ounces of straw-coloured pus and injected the iodine solution as before. On the 21st, three pints; iodine injected. On the 24th, twenty-four ounces; iodine injection. 27th, three pints; iodine injection. April 1st, six ounces; injected solution of carbolic acid $\mathfrak{z}\text{j}$ to Oj water, and withdrew again as with the iodine. On the 4th, one quart; carbolic acid injection. On the 8th, twenty-four ounces; warm water injection. On the 13th, one ounce; carbolic acid injection. On the 15th, six ounces; carbolic acid injection. On the 18th I made a free opening with a bistoury between the seventh and eighth ribs, and drained off a pint of highly offensive pus. Washed out the cavity thoroughly with the carbol solution by means of a large syringe fitted to a Eustachian catheter, which I could pass well down into the cavity. From this on I had the opening well

pressed open twice a day with the probe, and once each day I passed the Enstachian catheter, drew off the contained pus, and washed out the abscess until the injections returned pure, and until every drop of liquid was returned as was ascertained by careful measurement. On the 21st, although the wound had discharged freely since the 18th, by firm abdominal pressure a quart of pus was obtained. As before noted, I practised daily injections and comparisons of the fluid drawn out. The quantity secreted and retained on the 19th and 20th was so small as not to be taken account of, and I can only explain the remarkable increase on the 21st by suggesting the idea of a septum in the abscess which was broken down by the pressure from below, and allowed the matter to flow into the reservoir first struck by the puncture. On the 24th only two ounces were found. On the 25th and 26th a like quantity. On the 30th one ounce. From this date until the opening closed, May 5th, the first injections were only slightly tinged by the discharge from the walls of the incision, the injected liquid being in no wise increased in quantity, and returning at the last perfectly pure.

In all I took away about eleven quarts of purulent matter, and, together with that not estimated by drainage, not less than three gallons of pus were discharged, mostly from the liver.

On the 13th of May, when I discharged him, there was dulness at the lower portion of right chest, front and lateral. In this region respiratory sounds were feeble. Everywhere else respiratory murmur and resonance good. On the right side, about the region of operation, the heart-sounds were loudly transmitted. Chest measurements: On right side, from line drawn around chest, on plane of nipple, from centre of sternum to centre of spine, 17 inches; on left side, same plane and points, $17\frac{1}{2}$ inches; on right side, from line drawn on plane of lower point of sternum, from centre of sternum to centre of spine, 16 inches; on left side, same plane and points, $16\frac{1}{2}$ inches. His pulse was 84, and he was taking daily outdoor exercise. I saw him again on the 19th. Pulse 72; seemed in the full performance of all his faculties, and was able to take long walks without much fatigue.

In this case the indications for puncture were unequivocal, and were in accordance with those so well set forth by Hænoch, by Budd, and by Murchison. To have selected any other point would certainly have been a stretch of judgment. The result proves, in at least one instance, the advantage of opening through the intercostal spaces. I have been able to discover only two other successful cases where evacuation occurred either by puncture or spontaneous discharge in this situation. These I beg leave to offer in brief:—

CASE I. Reported by Mr. Henry Thompson, St. Bartholomew's Hospital, in the service of Mr. Thomas Smith. "Mr. Smith made an incision over the most prominent part (about opposite the sixth intercostal space, midway between the angle of the rib and sternum), and then passed in a director, which seemed to enter a canal until almost the entire length of the director was introduced. An immense quantity of pus gushed out, 54 ounces. An India-rubber tube was then passed into the opening as far as the director would reach, and fastened to the side."—*Lancet*, Aug. 1872.

CASE II. Reported by Dr. Stephen H. Ward. Abscess of the liver, which was opened "about an inch and a half below and a little external to the nipple. An ounce of thick purulent fluid, similar to what he had expectorated, but with very little blood, escaped."—*Ibid.*, April, 1873.

In regard to the site for operation, Dr. Murray remarks :—

“We may often, indeed, get nearer to the abscess through one of the intercostal spaces; and I think primary exploration may sometimes be advantageously made in this situation by a very minute flat canular instrument; but from never having seen any patient recover where the matter was evacuated in this direction (through the diaphragm), from finding that the action of the fibres of the diaphragm impede the free discharge of matter, somewhat like a valve, from observing that the air sometimes enters the wound when made here, and from considering that the opening is not so dependent through the walls of the thorax as when made through the abdominal parietes, I beg to recommend the latter mode in all cases.”—*Madras Quarterly Journal, Ranking's Abstract*, July to December, 1845.

Dr. Jackson observes :—

“There are cases of distressing nature, such as when abscesses make their way between the intercostal spaces, where it might seem advisable to make use of the scalpel. All that can be said of such cases is, that the operation affords but a faint hope of recovery; that it is better to leave the abscess to open of itself. The artificial opening must necessarily pass into the cavity of the thorax, and through the diaphragm into the liver. If a trocar is used, and the tube retained, there is difficulty in its management, which is not the case when the abscess points direct to the abdomen. Within my knowledge, in all cases in which an operation has been made through the intercostal spaces, the results have been most unsatisfactory. Indeed, I have never seen a single recovery under such operations.”—*Lancet*, 1859, vol. ii. p. 304.

Dr. Morehead states :—

“When there is general bulging of the right ribs below the seventh, with distinct fluctuation and pointing at an intercostal space, it is immaterial whether a puncture be made or spontaneous rupture take place. In both circumstances there will be gangrene of the soft tissues from thinning, and probably caries or necrosis of one or more ribs.”—*Ibid.*, 1865, p. 378.

Dr. W. Stewart says :—

“During my service in India, I have seen, both in my own practice and that of others, many cases of this disease; and under the ordinary restorative and expectant treatment, where abscess burst through the right lung, I have noted several recoveries; but where the abscess discharged in other directions, as into the transverse colon, stomach, etc., or externally through the parietes of the thorax or abdomen, whether naturally or by artificial opening, I have not met with a favourable termination.”—*Lancet*, 1870. 426.

Dr. Maclean also declares that he has never known a case of recovery from abscess of the liver, where it made its way into the cavity of the pleura, or where the abscess points externally through an intercostal space.—*Reynolds' System of Medicine*, vol. iii.

Dr. Morehead's statement demands modification. In none of the three cases of recovery I have given did “gangrene of the soft tissues” or “caries or necrosis of one or more ribs” follow.

The valve-like action of the diaphragm impeding the issue of matter, referred to by Dr. Murray, and the elevation and depression from respiration mentioned by Dr. Jackson, are well-grounded objections to puncture through the intercostal spaces. In my case, after the lung had expanded and respiration through it had become well established, the incised passage was rendered crooked, and great difficulty was experienced in passing the tube through the diaphragm. The diaphragmatic opening was made at least an inch in width, and had it been narrower it might have been impos-

sible to strike it so as to admit the passage of the catheter. With liquid in the pleura, compression of the lung, and stationary chest-wall, as in my case, with a good free incision and daily cleansing, the operation between the ribs may be as admissible as in any other region. In Case I., reported by Mr. Thompson, there was "dulness on right side for an inch above the nipple, with no respiratory sound in front," and the "feeble respiration" at the back was probably transmitted. The successful result in this case, too, may have been due to liquid in the pleural cavity with lung compression, and little or no respiratory movement on right side.

I must not close this article without allusion to the discharge of abscesses of the liver through the lung tissue and bronchi. Of favourable issue in this way more cases are on record than in any other. Mr. Waring's analysis of three hundred cases shows that a selection is manifested for this route in two cases to one for the pleural cavity or abdomen. The pneumonic inflammation in my case illustrates also a tendency in this direction, which was overcome by the wound through the diaphragm.

ART. XIX.—*Addition to Dr. W. W. KEEN'S Article on Chloral.*

Since writing the paper on page 76 of this number of the Journal, I have injected two subjects, one with chloral alone and another with chloral and sulphite of soda. They are the first ones I have had the opportunity to try in the warm weather. Both kept well for about three or four weeks, but then began to decompose, with very little odour however. I am surprised at the result, since the subjects above reported, which had been injected in cold weather, had kept so well during subsequent hot weather. It would be, however, very unfair to report only successful results. If this difficulty hold good in later trials, it will still be the fact, however, that in the autumn and winter no other agent has equal advantages as a preservative of subjects for dissection. I have seen nothing to change my opinion as to its value for pathological specimens and in surgery.

REVIEWS.

ART. XX.—*Snake Poisoning.*

1. *The Thanatophidia of India.* By J. FAYRER, M.D., etc. etc. London, 1873.
 2. *Report of the East Indian Government Commission on the Effects of Artificial Respiration, Intravenous Injection of Ammonia, etc. etc., in Indian and Australian Snake Poisoning.* Calcutta, 1874.
- Physiological Action of Venoms.* Drs. FAYRER and LAUDER BRUNTON, Proceedings of the Royal Society of Great Britain, 1874.

PERHAPS no subject of great interest has had as small a share of scientific attention as that of the venom of serpents. About every other clusters so large a host of names that it is often difficult to decide to whom belongs the credit of the various steps which have led us, by degrees, to full modern knowledge. But, as regards snake poisons, it is strangely different. Redi (1664) was the sole observer worth naming until the immortal work of Fontana (1765), a century later. Another century passed before Dr. S. Weir Mitchell's work appeared, and within the last few years, the English surgeons in India have again taken up this quest. As results we have the splendid volume of Dr. Fayrer and the further work of Brunton and Fayrer, with, finally, the Report, by Vincent Richards, of the Government Commission in India.

We have indeed often marvelled that so few had taken up this pursuit in earnest, for about no other poison is there still the sense of mystery, and horror, and tragical interest which surrounds this strange product of the serpents' glands. The reviewer spent nearly half of each day and often half of each night, for three summers, in the room with a few dozen venomous serpents, and no nearness or constancy of acquaintance served, with him at least, to make in the least commonplace these deadly apothecaries. Perhaps the danger of the study, for danger it has, may have helped to deter some men from this research, but not many, we fancy, for when have physicians failed to face peril with steadiness where duty led them? Nor is it easy to decide why, to this very day, the number who have dealt with this fascinating subject remains so small.

About its earlier scientific history, when it had just begun to deserve the name of scientific, there lingers a certain quaintness.

The earliest book on serpents lies now before us. It is the *Osservazioni* of Francesco Redi, Florence, 1664. Redi was born in 1626, was of noble birth, a court physician, an accomplished scholar, famous for the beauty of his Italian, a poet, philosopher, and naturalist, the friend of learning, and himself most learned. Late in life he had epilepsy; he died in 1697. His writings on the viper made clear for the first time that it is a "humour" which is the fatal agent. His experiments are clever and ingenious, and he disposes of many of the absurd opinions held in his time as to serpents.

Charas, who famously disputed Redi's view, was born about 1622, and had an odd sort of life, having been called in consultation to see Charles II., and having been converted from Calvinism by the bland agency of the Spanish Inquisition. Even after leaving Spain he remained, it is said, a good Catholic, wrote about drugs—a Royal Pharmacopœia, which we have never been able to see—also a book about vipers, and on the same pleasing subject a Latin poem, which must be curious reading. The viper book was “rendered English” in 1673. He believed the poison gland to be a mere salivary secretion, and supposed the poisonous quality to be due to rage “or enraged spirit,” and to be curable by the volatile spirit of viper; wherefore, and on account of the goodness of its gall and flesh in medicine, he conceives the viper to be one of the pillars of physic, in which belief, no doubt, he will be yet upheld by the homœopath of to-day.

In strange contrast is the work of Fontana, who wrote a century later, and who stands matchless in his time as an experimental toxicologist, and may bend to few who have come after him. With him fall to the ground unnumbered errors as to serpent poisons, and his work is a marvel of clearness, accuracy, and ingenuity, guided throughout by a certain docility of intelligence and tempered by the ever-present belief that they who seek to learn by experiment must often be led astray, but that never to experiment is a poor way of seeming to be always in the right.

In fact, we owe to this great master the whole foundation of modern knowledge as to snake venoms, and to resume, in however brief a form, what he has said would be almost to write a treatise on this subject, which gained little new of value until Home wrote on the minuter anatomy and Russel experimented on Indian serpents.

There came a long gap in time, when, finally, Dr. Weir Mitchell's work, of which we shall say little more, was the means of arousing new inquiry. But a few years have passed since, in his papers and in the *London Med. Times and Gazette*, he justly reproached the physicians of India with their failure to study the venom of Indian serpents, and he now finds it a pleasure, nay, almost a duty, to point out how admirably they have since then pursued this quest, and how little to-day they deserve the stigma of neglecting so tempting a study.

In 1873 the government of Hindostan published, at its own cost, the splendid volume of Prof. Fayrer. It delineates, in numerous plates of unequalled beauty, the poisonous serpents of India, and in a brief but startling chapter makes clear that at least 20,000 persons die annually in India of snake-bite.

Chapter 3 deals with treatment. The ligature is advised as first of all means, to be followed by amputation of any small member bitten, or excision of other parts. Then actual canterbury is praised, and it is said that mineral acids, chloride of zinc and carbolic acid may be used. Dr. Fayrer did not then know, what he probably knows to-day, that already in this country these agents had been shown to be useless. Ammonia, used locally, he thinks valueless, as did Fontana, and as does the reviewer. Stimulants are, he thinks, of value, but he was not then in position to show why. He puts no faith in antidotes. In this country it has been pointed out that there were eighty in repute, nearly all of which had been proved to be of life-saving efficacy, out of which comes the conclusion either that olive oil, snakeroot, hartshorn, and brandy are alike and equally sure as cures, or that the rattlesnake is a less deadly practitioner than had been believed.

Sec. IV. gives cases of snake-bite in man, and Sec. V. experiments on the actions of venoms on lower animals, etc. This portion of Dr. Fayrer's memoir is of great interest. He thinks that the *cobraophiophagus* and *daboia* are alike in poisoning power, and that the *bungarus cœruleus* is slower but quite as fatal. *Echis* seems to be nearly as bad a poisoner, and the *hydrophid*, venomous water-snakes, although believed to be very fatal, have not as yet been sufficiently studied. The Hindostanee *crotalidæ* he thinks less sure to kill. The symptoms as stated resemble those from the bites of our own crotalids, but Dr. F. thinks that while in viperine snake-bites the victims die with fluid blood, in colubrine snakes they perish while the blood still remains able to clot.

All experiments agree as to the greater susceptibility of birds and the lesser ease of poisoning cold-blooded creatures, but it has also been shown in America that if a cold blooded animal be warmed it dies much faster.

Dr. Fayrer says that snake poisons pass through mucous membranes and are deadly applied to mucous or serous membranes, the stomach, or conjunctiva. We are certain that crotalus venom is harmless in the mouth and stomach, and in the eyes of rabbits; fatal in the lung, peritoneum, and pericardium. As this discrepancy may be due to defect of observation, or be a real difference of results, it is most desirable that the experiments should be repeated.

Professor Fayrer has just put this in our power by exchanging poisons with us, so that we hope to be able to set at rest this mooted point.

On looking over our notes we find that rabbits alone were used to test the power of the conjunctiva to absorb crotalus venom. In India, fowls and dogs were resorted to, and the difference of result may be in this fact or in the qualities of the various venoms.

It is of course most important to learn if the snake venoms be all alike in their toxic qualities, or if they differ essentially. We had previously believed that in this respect no great difference would be found which could not be accounted for, by the varying amount or concentration of the venom in the thanatophidia of various lands.

Fayrer, Sec. V., says, there are differences among the numerous genera and species in India, as to these points, but that the variations in symptoms are not of any great physiological or pathological import. In some cases, he says, convulsions are more marked; but this is the case with many poisons, and in crotaline poisoning, there may or may not be convulsions near death. In other Indian serpents the lethargy is more notable, but as to this, also, we may add, that with crotaline venom from a single snake, one dog would die convulsed, and one would pass early into a stupor broken only by death.

As to local symptoms in the echis poisoning, Fayrer found them most decided. My own observations taught me that they were worse when the bite fell upon loose areolar tissues, and that time was needed to give them their fullest development. As to loss of coagulability in the blood, Fayrer thinks, as I have already stated, that it depends on the class of serpents, and is never found in deaths from colubrine snake-bite. He admits, however, that in the cobra (colubrine), death from intra-venous injections of venom causes fluid blood. In crotalus poisoning it is more or less a question of time, and if the animal survives 30 minutes to an hour, the blood is usually fluid.

¹ New York Med. Journ., January, 1868.

Since Dr. Fayrer's return to England, in conjunction with Dr. Lander Brunton, he has carried on a new series of investigations made with dried venom of East Indian serpents. These are in every way admirable and serve still further as a whole to show the near likeness between cobra and crotalus poisoning—as concerns mere externally visible symptoms—their description of cobra poisoning might pass for that of a case of death from rattlesnake venom. There are some points of difference, as in the fact that while crotalus venom causes intense quivering of muscles when locally applied, cobra venom does not. They have shown also that this latter venom locally palsies a muscle, a point which had not been examined, while their sphygmographic studies of the cardiac states are also an advance. In rare cases they found that the death was by spasm of the heart, but that usually it was due to paralysis of centres and consequent asphyxia. The local effects on the heart should be studied anew with crotalus venom. In most cases we found that the heart was slowly enfeebled, and the blood pressure lowered, but that the death was not primarily cardiac.

Mr. Vincent Richards, Drs. Ewart and Mackenzie, are the members of a still active commission which has made already one most able report on snake poisons. Their labours cover an enormous field, but were chiefly directed towards the examination of so-called antidotes, and as to the value of artificial respiration which they have shown to have power to prolong rather than to save life. As regards antidotes Fontana with vipers, Fayrer and Vincent Richards with East Indian thanatophidia, and Dr. Weir Mitchell with our own serpents, have each in turn reached the conclusion that for the venom of serpents there is no antidote.

We have found time to do no more than briefly to refer to the varied labours of the late Indian observers. They seem to us to have been conducted with fairness, ingenuity, and a most sincere desire to reach the truth. Only they who have themselves conducted laboratory work in our own torrid summers can form an idea of the terrible task of pursuing physiological labours in the heats of an East Indian climate, and it would be difficult to praise too highly the energy and intelligence with which Fayrer and others have fulfilled their trying and dangerous duty. Still there remain a host of matters for study, most of which have been carefully worked over with American serpents, but some of which have never been subject to research here or elsewhere. We do not doubt that the good work which has progressed so far in India will be thoroughly followed up, and certainly they who have begun the task have shown how fully competent they are to complete it.

S. W. M.

ART. XXI.—*La Responsabilité Criminelle et la Capacité Civile dans les Etats de Trouble Intellectuel.* Par le Dr. de KRAFFT-EBING. Traduit de l'Allemand par le Dr. CHATELAIN. Paris, 1875. pp. 268.

THE author of this little book is physician in chief of an asylum in Styria, and Professor of Psychiatry in the University of Gratz. Although a book of no great pretension, and professedly of an elementary character, yet it is evidently the fruit of a large clinical observation, and bears many marks of original research and reflection. One could hardly expect much

very new respecting the legal responsibility of the insane. Some truths may be viewed in a new light or enforced by additional facts; some forms of disease may be more accurately described, and their relations to others more clearly shown; and the provisions of lawgivers may be tested by the results of clinical observation. All this has been done in the little book before us, and so well done that the reader's interest in it is sustained from beginning to end. The subject is considered from a German point of view, and therefore by the English physician the book will be prized for its scientific merits rather than its practical utility. True, the facts of nature, the distinctions of right and wrong, the dependence of the insane on others for care and protection, are essentially the same in one country as in another, but different modes of thinking, different social habits and institutions, and especially, the milder spirit of German jurisprudence, have made their practice in dealing with the legal relations of the insane somewhat different from that of Anglo-Saxon communities. The German law, always animated by the Roman Civil Law from which in a great measure it has been derived, is disposed to extend the area of irresponsibility to the furthest limits. If the German medical jurists have been less intent on measuring exactly the influence of insanity on the springs of human conduct, and setting up those nice distinctions which would naturally follow such a process, they have, in a more scientific spirit, chosen to consider it as a strictly pathological element to be studied like any other morbid action. While it must be admitted that the results of their study, owing to their inveterate proclivity to metaphysical speculation, are much inferior in practical value to those of French and English students, yet in laying down the elements of responsibility, they have avoided the traditional errors and the requirements of a harsh penal code, which characterize the principles and practice of the law of England. For instance, not one word does Dr. Krafft-Ebing utter about the tests of insanity of which we hear so much—the knowledge of right and wrong, of what is lawful and unlawful, the indications of contrivance and preparation—nor does he say one word about irresistible impulses. It is well that the English method of considering this subject does not universally prevail, and that in a country distinguished for its intellectual advancement, it is considered in a very different spirit. In their endeavour to settle the vexed question of criminal responsibility as affected by insanity, in exact conformity to the requirements of even-handed justice and a reasonable indulgence to human infirmities, and in harmony with the revelations of science, the English jurists have only succeeded in involving it in fresh obscurity and confusion. In any given case when the evidence is all in and counsel have made their pleas, no mortal can say whether the court's construction of the law will favour the conviction or acquittal of the prisoner. Indeed, Dr. Maudsley, speaking of such trials, scarcely exaggerates the matter when he says "the issue might as well be decided by tossing up a shilling."

Never has this discreditable uncertainty of the law been more clearly exhibited, than it was last year in the proceedings of a committee of the British Parliament, appointed to consider the Homicide Law Amendment. Among the witnesses examined were two acting judges, and on a given case being presented, one declared in favour of conviction, and the other of acquittal. So that it appears, as was well enough known before, that it depends not upon any plain, intelligible, unmistakable provision of law, but on the peculiar views of the judge, whether the prisoner's acknowledged insanity shall save him from being hanged or not. And for anything we

can see to the contrary, this kind of uncertainty must continue so long as courts are governed by metaphysical distinctions rather than the truths of science. There is but one way out of the discreditable muddle in which the whole question of insanity is involved, and that is to take it from the judge altogether and send it to the jury, divested of all tests and technicalities. The question of insanity is a question of fact, and, like all other matters of fact, it should be decided by the jury. When a judge tells a jury that they must convict the prisoner, who is acknowledged to be more or less insane, if he was capable of distinguishing right from wrong, he announces what he supposes to be a veritable fact established by the observation of medical men, viz., that so long as a person can distinguish between right and wrong, he is of sound mind *quoad* the act with which he is charged. In thus assuming a certain state of facts, he is unquestionably usurping the functions of the jury, and thus continuing this play of cross purposes performed by the courts in adjudicating a matter of life or death. To the courts of one of our States—New Hampshire—belongs the honour of beginning a new dispensation, by casting aside the traditions of the elders and restoring the law to its ancient simplicity of purpose. A great step was taken in the right direction, when the judge instructed the jury that the plea of insanity in excuse for crime was for them, exclusively, to consider in all its bearings; that the first point they had to settle was whether the prisoner was insane; and if they found him insane, the next and only other point was whether the act in question was the offspring of such insanity, and therefore not a penal offence.

The little treatise before us is also noteworthy as indicative of the drift of opinion on some vexed subjects among those whose position entitles them to speak with authority. The author is not one of those who think it a mark of wisdom to decry a thing because it is new, or favoured by a small minority. He believes in moral insanity, which he regards as well established as any other form of the disease. He believes in kleptomania, pyromania, homicidal mania, erotomania, etc., only he regards them, not as strictly specific diseases, but as manifestations of a general mania, in which the mind is affected as a simple entity, and not as a collection of distinct faculties. In this particular, we think he errs, but since we agree as to the thing itself, we are not disposed to quarrel about the manner in which it is evolved.

The key-note of our author's doctrine is given when he says that the indispensable elements of criminal responsibility are, knowledge of the unlawfulness of the act, and perfect freedom of will—that is, a will free from all abnormal influences—to commit or abstain from committing it. This, we believe, is the prevailing doctrine among the German-speaking medical jurists, and it gives them an immense advantage over their English and American brethren—an advantage which is greatly heightened by their mode of procedure. In a case of alleged insanity, the disease still existing, the latter, with only the most imperfect personal examination of the prisoner, or perhaps none at all, and with more or less hearing of the testimony, are asked whether, in their opinion, the person is sane or insane. If they believe the latter, they are required to specify the particular acts or utterances which they regard as proofs of insanity, each one of which is supposed to be such as only an insane person would do or say. The German expert is appointed by the court to make thorough personal examination of the prisoner; and all the evidence in the case, which, it must be remembered, is collected in the successive stages of the process before

the final adjudication, is submitted to his inspection. With all this preparation he draws up an elaborate report in which he examines the history of the prisoner, physical and psychical, from his cradle to the present hour, everything calculated to shed any light on his mental condition being noted and discussed, and the successive steps of the investigation as carefully taken as if it were a diagnosis of a thoracic or abdominal disease. This report generally determines the decision of the court. How different from this the folly perpetrated in our mode of procedure, whereby the testimony of the expert called in expressly, because of the inability of the jury to understand matters of science, may or may not be allowed to shape the verdict, invested as the jury is with the power of passing judgment on the value of the expert's testimony.

Our author's descriptions of the various forms of insanity, though brief, are remarkably comprehensive and graphic. We would like to quote some of them at length, but that our limits forbid. He recognizes in all its length and breadth the fact that the moral sentiments may be affected by disease, while the intellectual faculties remain apparently sound. He thinks it may always be distinguished from moral normal depravity by peculiar traits or conditions, such as the existence of insanity or some other nervous affection among the progenitors, thereby entailing upon the patient an insane temperament, or the manifestation of singularities of conduct and demeanor, freaks, fancies, and strange caprices, or inequalities of temper and spirits. Moral insanity should annul legal responsibility because it impairs the freedom of the will, subjecting it, as it does, to the control of disease or congenital deficiency. It is immaterial, we may add, where exactly the malign influence comes from, whether from the side of the moral or the reflective powers, as both are necessary to moral freedom.

Our author fully believes in *transitory mania* as a distinct, well-established form of mental disorder. It will be generally, if not always, found that the attack, which lasts from twenty minutes to six hours, has been preceded by cephalic congestion, arising from hereditary predisposition to cerebral disease, or from pregnancy, or parturition, or insolation, or intense emotion, or any condition calculated to disturb the cerebral circulation. Unconsciousness during the whole attack is an invariable incident, and, of course, no case can be considered as genuine without it. And we may also add that any kind or degree of reflective activity other than such as occurs in epileptic fits, furnishes ground of suspicion. Undoubtedly, it will sometimes be difficult to ascertain the true character of an alleged attack, but this is a poor reason for denying altogether the genuineness of this form of mental disorder. We cannot account for the scepticism with which it is so much regarded, except upon the common disposition to think that a thing which one has not seen himself, cannot have been seen by any one else. We recollect that Mr. Benjamin Bell, whose four formidable octavos were put into our hands in the years of our pupilage to initiate us into the mysteries of surgery, taught us that the hip could be dislocated in only two directions, and a greater than he, Sir Astley Cooper, doubted in the first edition of his book—to retract his statement, however, in a subsequent one—that dislocation backwards and downwards had ever occurred.

The Dr. agrees with most of those who have been much conversant with the insane, that the simulation of insanity may be easily detected with suitable opportunities of observation, and in many cases, these can be had only in a hospital for the insane. We are a little surprised at some statis-

tics gathered by a French writer, whom he quotes, Vingtrinier, that out of 43,000 criminals admitted to the prisons of Rouen, during 54 years, 205 only presented symptoms of insanity, and of these only one was simulated. The statistics on this point in this country, if obtained with some degree of fulness and accuracy, would be a valuable contribution to our knowledge.

In regard to the civil rights and responsibilities of the insane, our author's views agree substantially with those of English writers, while he justly condemns much of the German procedure as slow and complicated. We are glad to see that he has no faith in the credibility of the insane as witnesses in judicial proceedings. When the English courts began to admit the testimony of persons acknowledged to be insane, we believe it was a step in the wrong direction. And the reasons are that they are not responsible for what they say, in an action of perjury; they are careless observers; their recollections are apt to be confused and mixed up with fancies; and they are terribly prone to mendacity. If there is any vitiation of the moral sentiments in the insane more common and extensive than any other, it is a disregard of truth. Believing this, we cannot help regarding it as a piece of the grossest injustice to admit their testimony at all.

We trust this is not the last production we shall receive from Dr. Krafft-Ebing's pen. So much good sense, accurate knowledge, and modest pretension, we hope to see embodied in larger and more elaborate works.

I. R.

ART. XXII.—*A Course of Lectures on Physiology*, as delivered by Prof. KÜSS at the Medical School of the University of Strasbourg. Edited by MATHIAS DUVAL, M.D., formerly Demonstrator of Anatomy at the Medical School of Strasbourg; Adjunct Prof. of the Medical Faculty of Paris, etc. Translated from the Second and Revised Edition by ROBERT AMORY, M.D., formerly Prof. of Physiology at the Medical School of Maine, etc. Illustrated by one hundred and fifty wood-cuts inserted in the text. 8vo. pp. 531. Boston: James Campbell, 1875.

HAVING, for some time past, been familiar with the "Lectures" of Prof. Küss in their original form, we have no hesitation in saying that they constitute an excellent Manual of Physiology, in which the various functions of the human organism are described in an explicit and concise manner, and with the full recognition of their intimate relation with the minute structure of the tissues. In addition to the well-known and established facts which constitute the staple of most of the text-books of physiology, the author has embodied in his work many of the results of the latest investigations in the field of biological science.

The work is divided into ten parts which treat, respectively, of Cellular Physiology, the Nervous System, the Muscular System, and Physiology of Locomotion, the Blood and its Circulation, the Anatomy and Physiology of the Epithelium, the Digestive System, Respiration, Animal Heat, and Phonation, the External Integument and its Functions, the Organs of the Special Senses, and the Uro-Genital System, and Embryology.

Keeping in view the fact that the metamorphoses of cells are accompanied by chemical and physical phenomena, which figure as effects or even as assistant causes of vital acts, and being obliged to study these phenomena side by side with those which we call essentially vital, Prof. Küss has been led to regard the cell alone as the essentially vital element and its study the best introduction to the study of the varied and complex phenomena of life. He accordingly considers at some length, in the early pages of his work, the physical and vital properties of cells, in general, such as their form, colour, elasticity, chemical composition, electro-motor power, tenacity of composition, their origin, life-actions, and death. The various kinds of cells, their origin in and relations to the blastodermic membrane, and their functional relations to each other are also described.

We cannot regard as judicious, the order adopted by our author in his presentation of the functions or life-phenomena of the human organism. Recognizing that these phenomena constitute a living chain that must be artificially broken for convenience of study, he says:—

“The most striking phenomenon is the wandering of the blood globule; it might most naturally seem that the commencement of our study should be with this phenomenon; but we prefer to commence first with the nerve globule, which will lead us to study, secondly, the non-globular forms (muscles) with which it is connected; and subsequently the movements and other mechanical and physical phenomena of the organism, as well as the tissues which are its seat. Then we shall consider the blood globule and its circulation, and finally, prepared by our knowledge of the accessories, we can more readily comprehend the more intricate relations of the internal and external coverings, and especially the epithelium of the genital organs, as well also as our point of departure, the ovum.”

To treat of the nervous system and its vital manifestations before explaining the processes of digestion, absorption, circulation, respiration, etc., is to proceed from very complex actions to others much more simple in their character. In a systematic course of lectures upon physiology, method is of the utmost importance. The student should be led by degrees from the consideration of simple and well-understood phenomena to the study of the higher and more complicated functions. His attention should be first directed to the physical character, chemical composition, etc., of the blood; then to the processes of digestion, absorption, and respiration, by which the blood is constantly supplied with new material; next to the function of circulation, by which the vital fluid is incessantly brought into intimate contact with the tissues; and finally to the group of functions known as nutrition, calorification, secretion, and excretion. Having, in this order, mastered the details of the great function of nutrition by which the life of the individual is preserved, the student is then prepared to enter upon the study of the nervous system, by means of which the functions of nutrition are co-ordinated or harmonized and the individual enabled to feel, to move, to think; or, in other words, is brought into conscious relation with external nature. Reproduction and embryology come naturally to be considered last, involving, as they do, the action and laws by which the human species is maintained alive upon the face of the globe.

The minute anatomy of the nervous system is briefly and not very clearly explained. In the description of the nerves, prominence is given to the recent histological researches of Ranvier which seem to show that nerve-tubules are formed of cells joined together at the ends, or rather of annular segments caused by the dipping down, at regular intervals, of the tubular membrane into the white substance of Schwann. The nerve-cells are dis-

missed in a few lines, and no attempt, or, at least, a very imperfect effort, is made to show the manner in which collections of such cells, constituting ganglionic masses, are connected with each other by means of commissural tracts. Yet it is a matter of great importance that the student should be placed in possession of the most trustworthy facts which have resulted from the labours of Gerlach, Vulpian, Lockhart Clarke, Dean, and others, in relation to the course and arrangement of the fibres composing these tracts. Without such knowledge the wood-cut on page 33—a mere diagram—is as likely to confuse as to assist the learner.

Speaking of the vital activity of the nervous system, our author says:—

“It will be noticed, further on, that the materials consumed by the muscles during their activity are principally hydro-carbons (sugars and fats) and also albuminoids in small quantity. On the other hand, the nerve element seems to require albuminoid substances; and the more intense is the nerve work, the greater will be the amount of refuse material, from the combustion of the albuminoids (especially urea), in the excretions, in the urine, and in the products of the liver. According to Biasson (1868) the amount of urea excreted by man varies according to the amount of cerebral activity. Again, Oscar Liebreich has shown that, in animals who have been made to die by pain, after cutting the sensitive roots of one side of the spinal cord, this side (reduced to inertia) would consume less protagon than the other side.”

“These acts of nutrition produce in the nerves a disengagement of forces, which are brought to light by electrical currents; this phenomenon, though not directly observed in the nerve globules, is very evident in the peripheral nerves. In the state of rest certain currents are constantly traversing nerves, going from the surface to the interior, and acting as if the nerve fibres were the seat of two inclosed elements, the extremity being positive and the centre negative. In fact, whenever by means of a galvanometer, a communication is made between the external surface and the surface of the section of a nerve, a current is observed to pass from the periphery towards the centre. This electrical phenomenon, called the *electro-motory force of the nerve*, disappears or becomes feeble whenever the fibre is subjected to an irritation, or whenever it acts as a conductor, or in fact whenever it performs its proper function; a disappearance of the *electro-motor power* is called *negative oscillation*. It has been surmised that at this moment nutrition is arrested, and with this ensues the normal current of a state of rest. The deduction can easily be drawn in what way the fatigue of the nerve may be brought about, and why an irritation too long maintained may cause destruction, which latter may also be accompanied with pain.

“But, on the other hand, direct experiment shows that the nerve in functional activity does more—there is produced a development of heat, the existence of which Schiff has just demonstrated in the nerve-centres, influenced by fear, or excitement of the senses, or from every cause which may produce cerebral activity. It may be that the negative oscillation indicates that electricity of the nerve in a state of repose is transformed into heat in the active state.”

The physiology of the cranial nerves is clearly, concisely, and, in the main, correctly described. With regard to the function of the olfactory nerves, our author, influenced by the case reported by Bernard, cautiously says that they “*appear* to preside solely over the special sensibility that produces the sensation of smells.” This cautiousness, in view of the facts relative to olfaction, now on record, is scarcely justified. The results of the experiments of Vulpian and Phillipeaux, which consisted in dividing and extirpating the olfactory bulbs, the facts derived from comparative anatomy, and those furnished by Schneider, Rolfinck, Eschricht, Fabner, Valentin, Rosenmüller, Cerutti, Pressat, Hare, Notta, Ogle, and other clinical observers, constitute a body of evidence unmistakably showing that

the olfactory ganglia and filaments exclusively preside over the sense of smell.

In like manner, the importance of the chorda tympani, as a nerve of taste, is not, we think, sufficiently recognized by our author. "The inferior maxillary nerve," he writes, "presides over the special sensibility of the anterior half of the tongue (sense of taste), and the lingual nerve (lingual branch of the fifth pair) is generally considered as the nerve of this special sense. Though the chorda tympani may be concerned in the sense of taste, yet in all cases, gustatory nervous filaments are sent off by the trifacial, but by a complicated path which is not yet settled by physiologists." The result of section of the chorda tympani, or of the facial behind this nerve, on the one hand, and of division of the lingual branch of the fifth, on the other, as performed by Bernard, Schiff, Lussana, and others, strongly indicate the chorda tympani as the sole nerve of taste for the anterior portion of the tongue; and the conclusion is confirmed by the phenomena accompanying deep-seated facial paralysis, as observed in cases reported by Stich, Bazine, Bernard, Lussana, and others.

In the brief space of some twenty-four pages a very good summary is presented of our knowledge of the more salient points of the physiology of the spinal cord, encephalon, and great sympathetic nervous system. After speaking of the excitability of the cord, the course and decussation of the motor and sensitive filaments traversing it, and discussing its action as a conductor of motor impulses and sensitive impressions, and as a distinct nervous centre capable of acting independently of the brain, our author sets forth, in the following paragraphs, the laws of reflex action as exhibited in the medulla spinalis:—

"When a sensory impression causes a reflex phenomenon, the production of this latter is subjected in its intensity and anatomical distribution to certain precise rules, that Pflüger first established by experimentation on frogs (laws of Pflüger), and that Chauveau has confirmed by his experiments on the great mammalia. Thus a feeble irritation produced on the skin of the hinder extremities (for example, on the right side) causes a reflex movement in the muscles of the same extremity, that is to say, in the muscles whose motor nerves start from the spinal cord of the same side and at the same height as the sensory fibres which have been excited (*law of unilaterality*); if the excitation becomes more intense, the motory reaction is manifested on the opposite side, in the corresponding extremity; that is to say, by means of the symmetrical nerves (*law of symmetry*); and this corresponding extremity (left, in the example selected) presents always movements less intense than that (right) which received the excitation (*law of intensity*). Finally, if the excitation still increases, the motory reaction is extended to the centrifugal fibres of a different height, but always advancing towards a higher (or anterior) portion of the spinal cord, that is to say, that the radiation extends from below upwards, from the spinal cord to the encephalic cord (bulb, protuberance, etc.), (*law of radiation*); lastly, if the excitation and consequently the motor-reaction are sufficiently energetic to be propagated from below upwards to the bulb and protuberance, the reaction becomes general, is propagated in every direction, both downwards and upwards; in such a manner that all the muscles of the body take part in it, the bulb acting as a general focus whence radiate all the reflex movements (*law of generalization*).

"The reflex movements, obeying the five above-named laws, present, moreover, the remarkable fact that they are produced with a regularity, a co-ordination, which seems to indicate that these reflex actions are adapted to a certain purpose or aim; it appears as if there were in the histological dispositions of the spinal cord a *pre-established mechanism*, the manifestations of which so strongly impressed the first vivisectioners, that they (Robert Whytt, Prochaska, Legallois, Pflüger) did not hesitate to endow the spinal cord with certain

psychical properties, so vague and ill-defined that they were designated under the name of *sensorium commune*, *volition*, *perception*, *soul* (the latter must not be confounded with the ecclesiastical name 'soul'), etc.

"Thus a frog whose brain had been removed (to eliminate every influence foreign to the spinal cord), reacted when the foot was pinched, as if to defend himself; if the skin of one of his extremities was cauterized by a drop of acid, he would wipe it off with his foot, if perchance the acid had been placed upon the bend of the thigh or on the pelvic covering; moreover, if the leg which was bent thus towards the thigh were amputated, the animal, reduced to his medullary centre, was seen, after useless and droll efforts to reach the injured part (*law of unilaterality*), if the irritation persisted, and especially if it increased, to use the limb of the opposite side (*law of symmetry*) and rub or wipe the part irritated. Should the irritation continue he would execute movements with all his other limbs, a forward jump, in fact a flight. Reflex movements of this kind, though less perfect, are performed by man during sleep, when the cerebral organs are passive, and when the fact of tickling the sole of the foot is followed by a sudden withdrawal of the corresponding leg, or of both legs, etc. From this it may be remarked that the greatest number of reflex actions in co-ordination partake of the nature of defensive movements."

"The cell in the spinal cord is also susceptible of preserving up to a certain point the impression which has been produced by a centripetal nerve, though generally the former retains nothing after having brought its peculiar reflex action. Thus a certain habit of reflex actions is brought about, which terminates in happening more readily and regularly. In fact, the spinal cord can be educated; we need only cite the example of persons who play upon musical instruments, who finally attain the faculty of executing a musical piece or tune almost without any conscious volition, and without the intervention of the brain. The *cerebral memory* is simply in a higher degree a sort of *medullary memory*."

With regard to the great sympathetic he sums up its physiological history in the following words:—

"Formerly, too, the independence of this nervous system in its relations to the cerebro-spinal system was much exaggerated. It was made to preside as a central organ over the functions of the viscera in general, and more especially of those belonging to nutrition. Experiments by Cl. Bernard demonstrate that the submaxillary ganglion may serve as a centre for the salivary secretion; yet this result has lately been denied by Schiff. The ganglions that occur in the wall of the viscera at the terminal branches of the roots from the great sympathetic serve as a centre for partial movements of the visceral muscles, and regulate, by way of illustration, the peristaltic contractions of the intestinal walls. Other ganglions (of Wrisberg, semilunar, of the hypogastric plexus, etc.) might be considered as provisional centres where the nervous action coming from a higher point can be accumulated. To-day the majority of the phenomena of the visceral functions have as their nervous centre the spinal cord, and even in the *vaso-motor* functions (see circulation) the sympathetic has only a power of impression derived from the superior portion of the spinal axis. The same may be said in reference to its influence on the heart, and most of the visceral reflex actions whose centre is found in the spinal cord; so that the expression 'great sympathetic system' has at this present time but little physiological signification."

The third part of the work before us is occupied with an account of the minute anatomy and functions of the organs of locomotion, and is, altogether, a well-written chapter. As far as we are aware, in no text-book of physiology in the English language, of the size of the one now before us, is there to be found so good an exposition of the elasticity, irritability, chemical phenomena, electro-motor power, and functional activity of muscles, as in the volume now under notice. Our author's analysis of

muscular contraction embodies, in the main, the results of the most recent labours of Valentine, Weber, Bernard, Brown-Séquard, Du Bois Raymond, Ritter, Kühne, Brondgeest, Hermann, Helmholtz, Heidenhain, Paul Bert, Marey, Rosenthal, Aeby, Rouget, and many others who have especially directed their attention to this field of inquiry.

Part fourth treats of the blood and its circulation. The quantity of blood in the body, its chemical composition and spectral analysis, the physical and chemical characters of the red and white corpuscles are briefly and not very satisfactorily described. Nothing is said of the specific gravity, temperature, specific heat, variations in the colour in different parts of the body; nor the odour of the vital fluid. The red corpuscles are correctly spoken of as yellowish in hue, though in the earlier portion of the work (p. 5) the blood-globule is said to be red. The important question of the albuminoid substances of the blood, their origin, metamorphoses, and pathological relations, receive a somewhat extended notice. Prof. Küss believes that the red corpuscles originate from the white by a process of transformation, and endeavours to support this view by the following considerations:—

“The transformation of white globules into red, which some histologists consider doubtful, is, nevertheless, shown us by many proofs. The first which we shall mention is the direct one furnished by Recklinghausen, and, more recently, by Kölliker, who have seen the transformation of white globules into red produced even outside the organism, in blood kept at the temperature of the living body, in contact with a moist atmosphere. On the other hand, the study of the blood in the animal series shows all the transitions between the two kinds of globules. Rouget has shown what they are in the case of the invertebrate animals, the sipunculi. In the inferior vertebrate animals, particularly the mole (Kölliker, Rouget), we observe the transformation of the lymphatic corpuscles into coloured globules, provided with a nucleus, the colouring matter being first deposited under the form of granulations, and then spreading uniformly throughout the globules. Rouget has observed the same transformation in the embryo of rabbits; here the nucleus diminishes, and at length disappears, while the colouring matter is deposited first in patches, and afterwards generally diffused. Finally, there have been found in the thoracic duct, and even in the pulmonary veins (Kölliker), young red globules in an intermediate stage between the white globules and the perfect red. As to the indirect proofs of this transformation, it will be sufficient to remark that the lymphatic glands and the spleen are continually pouring white globules into the current of the blood. Now, as we do not find that their number increases in the blood, and know of no proof of their being destroyed, we are forced to conclude that they disappear by being changed into red globules. Finally, these red globules must have had an origin, and been derived from a pre-existing cell, for they exhibit globular forms which are already old, the loss of the nucleus and the presence of colouring matter being taken into account; if we can quote the theory of the *genesis* for the production of the white globules, which are elements in an early stage, we cannot do the same in the case of the red, which are old forms of elements; the early stage of the red globules can be represented only by the white.

“In their temporary condition the red globules themselves exhaust a part of the oxygen with which they are charged, the presence of this oxygen being necessary to their vitality and to their form. In making experiments, whenever it is desired to filter blood, care must be taken to introduce into the liquid a current of oxygen, which prevents the solution of the globules in the liquor. When destroyed in the system, the globules leave what are evidently the products of their decomposition. It is true that there are hardly any elements in the blood which can be considered as the waste part of the globules, but there are organs in which it is evident that they are decomposed. If we compare the blood which enters the spleen with that which leaves it, we observe a

diminution of half the *cruur*, whence we must conclude that the globules disappear in this organ. The examination of the spleen, too, reveals the presence of many elements which have the appearance of old blood globules. The blood of the portal vein resembles ordinary blood, but is more hydramic, being impoverished by mixing with the blood of the splenic vein, which has been already deteriorated in the spleen. In the hepatic veins we find, on the contrary, that the globules have increased in the proportion of one-half to two-thirds. Thus the liver, in opposition to the spleen, may be a sort of factory for the production of blood-globules.

"The *hemopoietic* function of the liver is not, however, sufficiently proved, and the numbers which lead to our belief in it may even be differently explained. These numbers show the relation of the globules to the liquid part of the blood, of the *cruur* to the *liquor*; that is, according to Lehmann, that a thousand parts of the blood of the portal vein (in the horse) contain only 141 parts of red globules (in weight), while we find 317 to a thousand in the hepatic blood. This increase does not, however, always take place; it has been shown that, after the formation of bile, the plasma of the blood is much concentrated, so that the water in the blood coming from the liver forms $\frac{6.8}{100}$ of the whole of the constituent parts, while water forms $\frac{77}{100}$ of the blood in the portal vein. In a liquid so concentrated as the hepatic blood, the increase of the red globules cannot be looked upon as invariable. On the other hand, the figures given us by Lehmann represent the weight of the liquid globules; now in the typical arterial blood, the weight of the liquid globules is 500 to 1000 (half *cruur* and half *liquor*). A careful examination of the figures thus leads to the conclusion that the red globules are rather destroyed, than formed, in the liver. A direct proof is given by finding out the proportion of red to white globules in the blood of the portal veins and in that of the hepatic veins; the following is the result: one white globule to 740 red in the portal vein, and one white globule to 170 red in the hepatic veins. This difference shows either that white globules are produced in the liver, or that the red are destroyed. The former hypothesis is directly opposed to what we know of the physiology of the liver; the latter, on the contrary, agrees perfectly with the biliary functions of this organ, the colouring matter of the bile being identical with hematoïdine, one of the derivatives of the blood. It is useless to object that we find coloured bile in animals whose blood is colourless (the invertebrate); for Rouget has found coloured globules in many of these animals, and in others hemoglobuline, or a substance analogous to it, is found in a diffuse state, dissolved in bloody serum. This has been proved by Fumouze, by the aid of spectral analysis, even in the case of animals whose blood appears quite colourless, and we may thence conclude that the liver is one of the places in which the *old* red globules are destroyed."

In his description of the mechanism of the heart's action, Prof. Küss maintains that the auriculo-ventricular valves are, in reality, not valves, but that they constitute, on the contrary, an entirely distinct apparatus, a sort of sleeve or bag hanging from the edges of the auricles into the ventricles, and alternately approaching and withdrawing from the walls of the latter. The tricuspid and mitral valves do not serve as barriers or plugs, preventing regurgitation during the contraction of the ventricles, but are movable continuations of the auricles, acted upon by the contracting papillary muscles, which lengthen the auricular cone and draw its edges together. While this hollow cone descends into the ventricle, the sides of the latter contract, and approach the cone in such a manner that the auriculo-ventricular apparatus acts as a sort of hollow piston, which penetrates the ventricle, and comes into close contact with its walls, and thus the ventricle empties itself completely, the contact becoming perfect between the sides and the auricular prolongation.

This theory, suggested by Parchappe in 1848, and subsequently developed still further by Burdach, Purkinje, Nega, Malherbe, Fossion, and

Béclard, has lately been the subject of an animated discussion in the Académie de Médecine. Although supported by a number of interesting facts, it cannot as yet be regarded as satisfactorily demonstrated. In accordance with this theory, our author ascribes the first sound of the heart, not to the sound produced by the sudden closure of the auriculo-ventricular valves, and augmented by the impulsion of the apex and the prolonged contraction of the muscular walls of the ventricles, but to the "sonorous manifestation of the working of the membranous auriculo-ventricular sails stretched out by the papillary muscles and their tendons, as long as the ventricular systole lasts. These long, jerky, and energetic tensions are exactly, he contends, "what would produce the sound which we have described." The weight of all the facts which have been collected upon this subject is certainly not in favour of this view.

The velocity and pressure of the blood, the special arrangements of the circulation in certain regions, the action of the arteries, the production of the pulse and its graphic study, the structure and functions of the capillaries and veins, the uses of the venous valves, and the production of vascular sounds, are all lucidly explained in a manner thoroughly in accordance with the most advanced facts bearing upon this part of physiological science. The most interesting portion of this chapter, however, is the *resumé* here given of the influence of the nervous system in the circulation. Within the compass of a few pages our author has succeeded in making the student acquainted with all the most recent and important facts bearing upon the actions of the cardiac ganglia, the moderating and accelerating nerves of the heart upon this organ, together with the influence exerted by the system of vaso-motor nerves and their centres upon the vascular apparatus.

The anatomy and physiology of the epithelial surfaces are considered at some length in the fifth part. In this portion of his work our author devotes considerable space to show that the connective tissue represents one of the principal regions of the lymphatic system, and that the loose cellular tissue may be considered as a vast lymphatic chambered sac, communicating directly with the lymphatic vessels.

"1. The origins of the lymphatic vessels are formed by the *capillary spaces*, previously described, or by prolongations in *cul-de-sac*, similar to the aforesaid capillaries, penetrating the intestinal villosities (*central chyliiferi*, or chyleducts), the papillæ of the tongue, etc. This view, which was that of Mascagni, Panizza, and Cruveilhier, is now corroborated principally by the researches of Sappey and Robin. The coat of these capillaries is simply a layer of epithelial cells, though some varicosities or other irregularities may be observed; which, in the thickness of certain organs, give them a more or less indented or triangular shape (and might lead to the belief that they are connected by extremely fine links to the neighbouring elements); it is only in the large capillaries near the efferent vessels, that we find in addition to the epithelial layer (endothelium) annular fibres, and a hyaline membrane studded with nuclei.

"The lymphatic capillaries, like the blood capillaries, thus form everywhere a close network, separated from the other anatomical elements by an epithelial layer similar to the endothelium of the bloodvessels; the continuation of this layer shows that their function consists essentially in properties of simple endosmosis or exosmosis; their proximity to the bloodvessels, and the sheath which in many parts they form for these latter capillaries, may show, perhaps, that their use is not only to bring back to the blood those fluids which are the products of destructive processes, as well as those which have not yet been absorbed by the process of nutrition; but also to become filled with the excess of the plasma of the blood, which enters these capillaries at each systole of the ventricle (E. Onimus).

"Many histologists, however, assert that, before the network of the capillaries is formed, or at the level of the most superficial network, the origin of the lymphatic vessels consists of simple lacunæ partially lined with an epithelium; in this case, the real origin of the lymphatic vessels would consist of the communications between these lacunæ, either with the cells of the connective tissue, or with smaller lacunæ, the network of the interstitial canaliculi of the connective tissue. This view resembles greatly an ancient theory (Hunter, Haase, etc.), according to which hypothesis these vessels took their rise in radicles terminating in absorbing mouths or pores, in the deep tissues as well as on the surface of the serous and mucous membranes; these opinions are now, however, corroborated by experiments and histological researches, which have been nearly all undertaken in Germany, and have produced in some cases 'such unlooked-for results that we even feel a sort of hesitation in relating them.'¹

"2. *The communication of the lymphatic radicles with the corpuscles of the connective tissue* was first pointed out by Virchow, who found, in a hypertrophied tongue, lacunæ unprovided with genuine walls (lymphatic capillaries), and containing prolongations of plasmatic cells, also hypertrophied. Leydig and Heidenhain have been the principal advocates of this theory; and the latter, in order to explain the absorption which takes place at the point of the intestinal villousities, supposes the existence of a network of plasmatic cells, communicating, on the one hand, with the prolongations of the epithelial cells, and on the other with the central chyle-ducts. Kölliker also embraced this opinion, having tested it by experiments on the lymphatic vessels of the tail of a tadpole, and Recklinghausen's view nearly resembles that, of these two writers; according to him the origin of the lymphatic vessels is found in a system of tubes which he calls *plasmatic tubes*, into some of which, situated in the cornea, he made injections, and which he considers as special lacunæ of the connective tissue. Now, according to Kölliker, these lacunæ exactly correspond to those parts specially designated by Virchow under the name of corpuscles of the connective tissue or plasmatic cells; though Recklinghausen persists in considering them as special lacunæ containing cellular elements having no prolongations (and for which he reserves the name of corpuscles of the connective tissue). However this may be, this view tends towards the latest opinion which has been enounced in reference to the origin of the lymphatic vessels.

"3. *The communication with the lacunæ of the connective tissue* belongs partly to Recklinghausen's theory, but it has been chiefly upheld by His, Tommsa, and Schweigger-Seidel. According to His, there is direct communication between the capillary vessel and the lacunæ, on account of the disappearance of the epithelium of the former; according to Kölliker, the lymphatic capillaries are not *intra-cellular* but *inter-cellular* tubes.

"This last opinion is the one which appears destined to triumph; it will be found to resemble closely that of Recklinghausen, if we carefully distinguish, as he does, what he calls the secretion canals (lacunæ) from the plasmatic cells. In France, this opinion has been adopted by Rouget; he considers the lymphatic vessels at their origin, in full communication with the vacant spaces, the interstices of the tissues. Comparative anatomy shows us, in the inferior animals, circulations which are merely those in lacunæ (sipunculi), and of which, in the superior animals, the only traces are found in the cavernous sinus for blood, and in the lymph spaces for the lymph. On the other hand, the peritoneum must be considered as the remains of what constitutes in the inferior animals the general cavity of the body (between the external integument and the internal integument, or the mucous membrane used in digestion); now in the superior animals the lymphatic system still communicates freely, by small openings, with the peritoneal cavity, as was first demonstrated by Recklinghausen. Having placed milk, or some pulverulent substance in suspension in a fluid, on the diaphragmatic surface of the peritoneum, he found that the

¹ H. Beaunis, "Anatomie Générale et Physiologie du Système Lymphatique." Strasbourg, Thèse d'agrégation, 1863.

drops of fat or other granulations passed the epithelial layer at certain points; examination of the peritoneal serous membrane, by the aid of nitrate of silver, convinced him that these points correspond to special *pores*, situated between the cells of the peritoneal epithelium (of the phrenic portion), and leading to lacunæ which form the commencement of the lymphatic vessels of the diaphragm. These facts have been verified in Germany by Ludwig, Schweigger-Seidel, Dybrowsky, Dogiel, etc.; the same experiments were successfully repeated by Rouget, who found that spontaneous injection of coloured particles took place in the lymphatic vessels of the diaphragm, when these substances were injected into the peritoneal cavity of the living animal; Ranvier also found that they penetrated these pores, when placed on the abdominal surface of the diaphragm of an animal lately killed.

"Recent investigations by Ranvier, however, seem to show that the orifices by means of which this absorption is produced, far from being open when in their natural state, open only at the moment when the reabsorbed particles pass through. The arrangement of these orifices is not plain, as yet; they were supposed to exist in all parts of the peritoneum (Schweigger-Seidel and Dogiel), and even in the mesentery; but, on resuming the subject, Ranvier became convinced that there are neither absorbing mouths nor stomata in these parts, but really holes, by means of which the two sides of the mesentery are brought into communication with each other. These orifices appear to resemble in structure those which he has described as belonging to similar parts of the epiploon. (For particulars, see Ranvier, *Soc. de Biologie*, 1872, and H. Farabeuf, *De l'Epidermie et des Epithéliums*, p. 171.)"

Though much inclined to allude in detail to the remaining sections on digestion, absorption, respiration, phonation, calorification, secretion, excretion, the senses, generation, and development, we are restrained from so doing, inasmuch, as to do justice to these portions of the work would require more pages of this journal than could be well afforded, so numerous are the subjects discussed, so abundant the citations from authorities the most recent, and so novel in some instances the views advanced; as, for example, the function assigned to the bile, and the office claimed for the epithelial globules in absorption and secretion.

Although we must dissent from some of the views of Prof. Küss, as not being thoroughly tenable, and although we regard the arrangement of the subjects of his work as not the best calculated to facilitate the acquisition of a logical, systematic, and comprehensive view of the course of life in man, we nevertheless consider the book to be the best of all the later textbooks of human physiology that can be placed in the hands of the American student, and we cordially urge its adoption as a manual by those engaged in teaching this intricate and deeply interesting branch of science. Though concisely written, many of its topics are quite elaborately treated. It exhibits great industry in the collection of materials, coupled with a judicious and discriminating use of them, and is unusually remarkable for the large number of the latest books, monographs, and theses on physiology that have been placed under contribution by its author and his editors. Dr. Amory, the American editor, has translated the book in an excellent manner, while the publisher has given to it a very handy and useful form.

J. A. M.

ART. XXIII.—*Contributions to the Mechanism of Natural and Morbid Parturition, including that of Placenta Prævia.* By J. MATTHEWS DUNCAN, President of the Obstetrical Society [of Edinburgh]. Small 8vo. pp. 456. Edinburgh: Adam and Charles Black, 1875.

THIS volume is made up of a series of essays and addresses, twenty-six in number, all but two of which have been previously published, either in medical journals or the transactions of societies, the earliest dating back to 1854, but the larger portion having appeared within the last three years. It is not therefore either a systematic or comprehensive treatise upon the mechanism of labour, or one having its subjects arranged in any special order, but a collection of valuable scientific obstetrical papers from the brain and pen of one who has rendered himself famous by the originality and force of his medical contributions, which in general, are the results of long-continued and laborious thought and observation.

It would be impossible, within the limits of a review, to do anything like justice to the numerous points of scientific interest involved in these various papers, which should be read to be properly appreciated. Several of them we have had occasion to refer to in former notices in this journal, and will now present a list of the subjects, not in the order in which they are given in the volume, but in that in which they have from time to time appeared, so that they may be referred to in the original, if more convenient to the reader.

1. "On the Pelvic Articulations in Parturition." (*Dublin Quarterly*, Aug. 1854.)

2. "The Production of Presentation of the Face." (*Edinburgh Medical*, July 1861.)

3. "Pelvic Articulations in Parturition." (*Edinburgh Medical*, Aug. and Sept. 1861.)

4. "Obliquity, or Lateral Flexion of Fœtal Head." (*Edinburgh Medical*, Sept. 1861.)

5. "The Production of Inverted Uterus." (*Trans. Obs. Soc. Edin.*, Mar. 1867.)

6. "Power exerted in Ordinary Labours." (*Royal Soc. Edin.*, April 29, 1867.)

7. "Increased Length of Cervix-Uteri after Labour." (*Med. Chirurg. Soc.*, Jan. 20, 1869.)

8. "Production of Presentation of the Face." (*Trans. Obs. Soc. Edin.*, April 13, 1870.)

9. "Synclitic Motion of the Fœtal Head." (*Trans. Obs. Soc. Edin.*, April 27, 1870.)

10. "Efficient Powers of Parturition." (*Royal Soc. Edin.*, Feb. 6, 1871.)

11. "Expulsion of the Placenta." (*Trans. Obs. Soc. Edin.*, March 22, 1871.)

12. "Mode of Progress of the Science of Natural Parturition." (*Royal Med. Soc.*, Jan. 19, 1872.)

13. "The Curves of the Developed Genital Passage." (*Royal Soc. Edin.*, Feb. 19, 1872.)

14. "Long Delay of Labour after Discharge of Liquor Amnii." (*Trans. Obs. Soc. Lond.*, June 5, 1872.)

15. "Changes undergone by the Cervix Uteri during Labour." (*Trans. Obs. Soc. Edin.*, April 23, 1873.)

16. "Spontaneous Separation of the Placenta when it is Prævia." (*Trans. Obs. Soc. Lond.*, Oct. 1, 1873.)

17. "Hæmorrhage during Pregnancy in Cases of Placenta Prævia." (*Edin. Med. Journ.*, Nov. 1873.)

18. "The Causes of Unavoidable Hemorrhage during Miscarriage or Labour when the Placenta is Prævia." (*Brit. Med. Journ.*, Nov. 22 and 29, 1873.)

19. "Sources of Hemorrhage during Miscarriage, or Labour at Full Term in Cases of Placenta Prævia." (*Obstetrical Journal Great Britain and Ireland*, Dec. 1873.)

20. "The Mechanism or Arrestment of Hemorrhage in Cases of Placenta Prævia." (*Edin. Med. Journ.*, Dec. 1873.)

21. "Address in Obstetric Medicine." (*British Med. Association*, Feb. 1874.)

22. "The Size of Aperture necessary for the Passage of the Placenta, and for the Passage of the Accoucheur's Hand." (*Trans. Obs. Soc. Edin.*, Feb. 1874.)

23. "Chief Direction and Extent of Uterine Shrinking; specially at the Time of the Complete Expulsion of the Contents of the Gravid Uterus." (*Trans. Obs. Soc. Edin.*, April 8, 1874.)

24. "Tensile Strength of the Fresh Adult Fœtus." (*Obs. Sec. Brit. Med. Ass.*, Aug. 12, 1874.)

25. "The Greatest Power of Labour exerted in Difficult Cases."

26. "The Power of the Uterus to Resist a Bursting Pressure."

It is to be regretted that the learned author of these papers had not time to re-arrange them in the form of a more systematic treatise, and thus avoid the frequent repetitions of parts of one article in the text of another, where the subjects bear a close relationship. The work is in large measure a physiological one, and, although necessarily somewhat speculative in many points, is highly ingenious, and written for the most part with convincing force. It is not of interest merely to the practitioner of obstetrics, but will be found almost equally so to those not thus engaged. Few men have done so much to advance the science of obstetrics as Dr. Duncan, and few enjoy the reputation he now has for accuracy and reliability of observation and deduction.

On page 192, we have a paper upon the "Synclitic Motion of the Fœtal Head," which first appeared in the *Edinburgh Med. Journ.* for June, 1870, and was very ably answered by the late Professor Hodge, of the University of Pennsylvania, in the October number of this Journal for that year. In the reprint, Dr. Duncan says of Dr. Hodge that Kueneker, of Berlin, has found in *him* an able supporter of *his* doctrine, appearing to ignore the fact that Dr. Hodge states in his criticism, page 325:—

"Synclitism, or parallelism of the plane of the child's head, in cases of natural presentation, to the planes of the pelvis and of the vagina, is one of my favourite doctrines, has been taught by me with more or less fulness and precision since the year 1832."

And, again, page 329:—

"I did not originate these views, although I may have presented them with more precision and detail than my predecessors—they belong to the French school of obstetrics." "My predecessor in the obstetric chair, Dr. Wm. P. Dewees, taught the same doctrine more than fifty years ago."

We think it would have been well for Dr. Duncan, in this new edition, to have answered Dr. Hodge's arguments, so ably set forth, and to have made him the leading author instead of Kueneker, whose name is made to appear more than forty times, whilst Dr. Hodge has but the simple mention referred to. We refer the reader to the two opposing articles of Duncan and Hodge, without other remark than that the latter much the more clearly defines his position and views, the explanations of Dr. Duncan being at times somewhat difficult to fully understand. Upon the uses of

the forceps and the mechanism of the pelvis, we have always regarded Dr. Hodge as second to no man either at home or abroad.

Perhaps one of the most important in the list of papers by Dr. Duncan, is that upon the "Tensile strength of the fresh adult fœtus," published less than a year ago, as it has a very decided bearing upon the advantages of version over delivery by the forceps, or *vice versa*. We give an abstract of the experiments and Dr. Duncan's deductions therefrom.

1. Female adult fœtus, 5 lbs. 6 oz., 18 inches long. Spinal column gave way under 90 lbs. Decapitation resulted at 118. Separation between 5th and 6th cervical vertebræ.

2. Same sex, 7 lbs. 7 oz., 20 inches long. Spinal column gave way at 120; decapitation 141. Disseverment between 6th and 7th cervical.

3. Same sex, 8 lbs. 15 oz., 23 inches long. Spine at 122; decapitation 136; separation between 4th and 5th cervical.

4. Same sex, 5 lbs. 12 oz., 21 inches long. Spine at 91 lbs.; and decapitation likewise; separation between 4th and 5th cervical.

Average decapitation force 120 pounds.

"It may be said with truth that if we are to avoid premature decapitation, the force used should not exceed a hundredweight." . . . "The podalic dragging force of this weight is considerably greater than ever known to be exerted in propulsive efforts in natural parturition, and so also is the force of 100 pounds, which is about the limit of what is available without destroying the life of the child. Estimates of the force of labour-pains have, as is well known, been published." . . . "It is a part of the theory of podalic extraction in contracted pelvis, that the force exerted then by the accoucheur exceeds that of the best labour-pains, and it is interesting to observe that the experiments confirm at least this part of the theory." (page 138.)

"Numerous failures arise from practitioners erroneously estimating the amount of extractive or dragging force they are exerting on the fœtus, since it is common to confuse the amount of force exerted with that made efficient as a dragging force; and it is the direct dragging force that may be allowed to rise to about a hundredweight. If a correct judgment is formed of the great difficulty of using a dragging force of a hundredweight, except when the accoucheur is favourably placed, it will be easily understood how important it is to have the patient in a convenient position, for the practitioner must wield his great force skilfully, and gently, and easily, if he is to do his work in the best way." (page 139.)

"I have spoken incidentally of the comparison between the power that may be exerted by dragging the child in podalic extraction, without compromising its life, and the power that may be exerted by dragging the child by the forceps." . . . "But there are various ways of showing that the latter is *considerably* higher than the former, which, as I have already said, is not the universal, or even the general belief." (page 142.)

This volume of obstetric essays should form one of the number to be found in every well-selected medical library, especially that of the obstetrical practitioner.

R. P. H.

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XXIV.—*Transactions of the Clinical Society of London*. Vol. VII. 8vo. pp. cxviii., 189. London: Longmans, Green & Co., 1874.

THE present volume of this excellent series differs from its predecessors in containing, beside the Cases and Memoirs read before the Society during the year, a full report of the famous Discussion on Pyæmia, which occupied several evenings during the early part of the session, and which was participated in by a large number of the Society's ablest members. This discussion followed the reading of his annual address by the president, Mr. PRESCOTT GARDNER HEWETT, who chose for his subject the occurrence of *Pyæmia in Private Practice*. Twenty-three cases were referred to, of which—

“Sixteen occurred in town, and seven in the country. Of the sixteen in town, all, with one exception . . . were in the best parts of town, scattered about in good houses, and in good-sized, well-ventilated bed-rooms, and well cared for; in fact, to all appearances, under most favourable conditions. The country cases, seven, were in different parts, and widely separated from each other, and their conditions, too, were in all respects apparently excellent.”

The discussion on Mr. Hewett's address was opened by Mr. JONATHAN HUTCHINSON, who gave an account of several fatal cases of pyæmia which had occurred on his farm among *cwes*; cases, probably, which the most enthusiastic followers of Simpson would hardly regard as due to “hospitalism.” Pyæmia is believed by Mr. Hutchinson to be directly communicated by contagion, and not caused either by overcrowding or by bad ventilation; hence systematic isolation is the remedy which he proposes, to prevent the spread of the disease. Mr. CHARLES HAWKINS was the next speaker, and recalled the opinion of Sir Benjamin Brodie that certain states of the weather were unfavourable to the success of operations, and particularly northeast winds and the great heat of summer. Sir JAMES PAGET, after referring to the difficulty in comparing hospital patients with those seen in private practice, said—

“My own experience exactly accords with your own, that pyæmia in private practice is, making a certain deduction for the different class of persons with whom we have to deal, just as frequent. arises from just as trivial causes, occurs after the same class of injuries, and leads to the same fatal results, as it does in hospital practice . . . and I may here add, as it is, after all, the chief point to which the paper must tend, that not only with pyæmia, but with the other accidents, as they are called, of operations, I have seen no reason to believe that hospitals are places of greater infection, as it is called, or of greater unhealthiness, than is met with in private practice. I have seen three cases of hospital gangrene in private, and only three under my own care at St. Bartholomew's. . . . I am, therefore, very earnest in the hope that the term ‘hospitalism,’ which is being applied not only to this, but to many other diseases that occur in surgical practice, will be at once and forever abolished.”

The discussion was further continued by Dr. BARNES, MESSRS. DE MORGAN, BRYANT, HOLMES, and CROFT, DRS. BASTIAN and BRAXTON HICKS, MESSRS. H. LEE, ERICHSEN, HULKE, SAVORY, CALLENDER, BARWELL, BRUDENELL CARTER, CADGE, ADAMS, and DURHAM, Dr. A. P. STEWART, Mr. SPENCER WELLS, and

DRS. GORDON, BURDON SANDERSON, FAYRER, and MOXON. The president finally replied, and joined with Sir James Paget in repudiating the term "hospitalism," as used in the sense in which it has latterly been employed. Referring to Mr. Erichsen's doctrine of "overcrowding," he used the following language:—

"And here I would say that 'hospitalism,' in this discussion, has been used under two very different significations. It was first used, by Sir James Simpson, as meaning the hospital itself and nothing else; and the deduction that he drew was that we were to pull down our hospitals and build new ones; that we were to divide the wards into smaller wards; that the larger the ward the more infectious it was; and that the older the hospital, the more infectious it was. With such deductions as those, supposing them to be true, the word 'hospitalism' is a proper word; but now I hear 'hospitalism' described as being, simply, the overcrowding and aggregation of a certain number of bad cases in a ward. This has nothing to do with the hospital; it has to do with the surgeon—with the person in charge of the hospital. It is simply a case of maladministration."

While we cannot say that the report of the Clinical Society's discussion has added anything positively new to our knowledge of pyæmia, the report itself is full of interest, and exhibits in a very favourable light both the familiarity of the members with the subject under debate, and their readiness in argument; we know of nothing better adapted to impress medical readers in this country, with the truly metropolitan character of such cities as London and Paris, than a study of the reported discussions which occur in their societies.

In accordance with our custom we shall consider separately the *surgical*, and afterwards the *medical*, papers included in the present volume, and shall first invite attention to a communication by Mr. HENRY ARNOTT, *On a Case illustrating Prof. Esmarch's Method of Preventing Loss of Blood during Surgical Operations by means of Elastic Bandaging*. Mr. Arnott's case was one of excision of the knee-joint, which did well after the operation, though, we must be pardoned for saying, no better, it seems to us, than it would probably have done had the operation been performed without the aid of Prof. Esmarch's method; as to the bloodlessness of the operation in this instance, it is hardly necessary to say that excision of the knee is almost never attended with troublesome hemorrhage, and that it is sometimes not necessary to apply even a single ligature; while after the elastic cord was removed, in Mr. Arnott's case, "the free oozing . . . was sufficiently troublesome to cause much delay in completing the operation and arranging the limb on its splint in the usual manner."

The next paper gives an account of a case of *Aneurism of the External Iliac Artery cured by five hours' continuous Pressure with Lister's Abdominal Tourniquet applied on the Abdominal Aorta, while the Patient was under the influence of Ether*; by CLAUDIUS G. WHEELHOUSE. The patient, who had a syphilitic history, had been some months previously successfully treated for popliteal aneurism of the same side (the right), by instrumental compression continued for eight hours. Upon the present occasion insensibility was first induced by the administration of chloroform, ether then being substituted, and the anæsthetic effect of the latter agent being maintained for five hours, at the end of which time it was thought necessary to remove the abdominal compressor (which had been applied just over the umbilicus), from fear of gangrene, the patient being at this stage of the proceeding "black" in both limbs, and 'blue' as far as the tourniquet." Pulsation in the aneurism was now found to have ceased, but returned in the course of an hour and persisted, though gradually diminishing, for about a day and a half, by which time permanent consolidation had been effected.

Mr. BARNARD HOLT contributes the next paper, which gives an account of *A Case of large Femoral Aneurism, treated by Pressure, under Chloroform, maintained for fifty-two consecutive hours.* In this case a previous trial of pressure, kept up for twelve and a half hours, had proved unsuccessful. On the occasion of the second and successful attempt, instrumental compression was maintained for fifty-two hours, the points of pressure being alternately the common and the external iliac arteries. During almost the whole of this time the patient was kept under the influence of chloroform, the administration of which agent was only occasionally discontinued "to admit of patient taking Liebig and brandy." The urine passed while the treatment was in progress, was examined by Dr. Dupré, who found that it contained chloroform but no sugar.

In the next paper, which is communicated by Mr. J. WARRINGTON HAWARD, Mr. GEORGE POLLOCK describes a *Case of Aneurism of the Superior Mesenteric Artery.* Mr. Pollock's patient was a man, forty years of age, upon whom the "rapid pressure treatment" was twice tried by the application of Lister's aortic compressor, once with the aid of chloroform for two hours and ten minutes, and once with the aid of ether for an hour and a quarter. Upon each occasion the patient became so faint that it was necessary to suspend the treatment, and hæmaturia ensued and lasted for several days. The application of a moderate degree of pressure, so as to diminish but not arrest the flow of blood through the aneurism, was then begun and continued for several hours each day during a period of nearly six months, at the end of which time the patient left the hospital "with the tumour much more solid, but with the bruit and pulsation very distinct." Still six months later the patient was re-admitted, the tumour having increased in size, and in another month died suddenly, with the usual symptoms of profuse internal hemorrhage. At the autopsy it was found that

"The aneurism was of the superior mesenteric artery; it was fusiform in shape, and six inches long. It involved the aortic opening of the artery which formed part of the sac, and the branches of the artery were given off from the end of the sac. The dilated aortic [*sic*] just behind the sac had given way, and allowed the fatal extravasation of blood into the abdomen. The hepatic and other branches from the adjacent part of the aorta were atheromatous. The sac of the aneurism was nearly filled with laminated clot, there being only a small channel left through its centre, through which the blood still flowed."

Both of the following papers are by Mr. ROBERT BRUDENELL CARTER, the first being entitled a *Case of Sarcomata of both Irides*, and the second a *Case of Orbital Sarcoma, treated successfully by Excision and Cautery.* An abstract of the latter paper has already appeared in the pages of this Journal, in the number for April, 1874 (p. 560). In Mr. Carter's first case, the tumour was removed from one iris by a modified iridectomy, but the growth quickly recurred. A microscopic examination by Mr. Haward showed its structure to be that of a round-celled sarcoma. A postscript, dated nine months after the time of operation, mentions that there had been, up to that time, very little visible increase of the growths, and that, though vision was much impaired, the patient's general health was excellent.

We shall next invite attention to *A Case of Blood-cyst of the Hand*; by J. WARRINGTON HAWARD. The patient in this case was under the care of Mr. H. Lee, who removed the growth and handed it to Mr. Haward for examination. The tumour occupied the palmar surface of the right hand, and was firm, and the skin over it red and tense. Indistinct fluctuation was perceived, and there was œdema and restricted mobility of the thumb and fingers. A dull throbbing pain extended up the forearm. The operation consisted in

making an incision into the part, and turning out the tumour, the patient being under the influence of ether, and the limb bandaged by Esmarch's method. A capsule of condensed tissue was left in the wound and ultimately sloughed away. The tumour was found to consist of—

“A somewhat oval-shaped mass of a pale yellow colour, semi-transparent, of about the consistence of gelatine. In the centre of this tumour was a cavity containing numerous small, round, and irregular-shaped masses of similar material, besides some old blood-clot. The wall inclosing this cavity was from $\frac{1}{4}$ th to $\frac{3}{8}$ ths of an inch thick, and from its inner surface were irregular projections. The microscope showed the walls of the cyst and the loose masses contained therein to be composed of similar elements, viz., spindle-shaped cells with oval nuclei, closely placed in a very scanty intercellular material.”

Mr. Haward terminates his paper with some interesting remarks upon the very varied clinical histories of different cases of blood-cyst; as he justly remarks, any case in which the cyst-wall is composed of sarcomatous tissue, must be considered of doubtful benignancy.

Following Mr. Haward's paper is one, communicated by Mr. G. W. CALLENDER, from the pen of Dr. JOHN H. PACKARD, of Philadelphia, giving a *Description of a Bracketed Splint for Excisions of the Knee, or for Compound Fractures*. The peculiarities of this splint are sufficiently familiar to American surgeons from Dr. Packard's accounts of it published in the number of this Journal for July, 1870 (p. 139), and in the *Transactions of the American Medical Association* for 1872 (vol. xxiii. p. 491).

Mr. CALLENDER is himself the author of the two next papers, the first of which is entitled, *Neuralgia treated by Stretching the Median Nerve*, and the second, *Neuralgia of the Hand, treated by Amputation of the Little and Ring Fingers and of Part of the Index Finger*. Several years ago¹ Mr. Callender suggested an operation for cutting away the thickened tissues from around a nerve, in cases in which compression of the latter was the cause of persistent pain—a suggestion, however, in which he appears to have been anticipated by the late Dr. J. Mason Warren,² of Boston, who successfully resorted to this mode of treatment in the year 1863. In the first case now recorded, Nussbaum's and Billroth's plan of isolating and stretching the affected nerve was resorted to, and with gratifying success, the favourable result being rendered peculiarly conspicuous by the fact that the patient had previously submitted without benefit to two amputations, an excision of a neuroma, and an excision of part of the median nerve. As Mr. Callender points out, a strong argument in favour of the operation of nerve-stretching is that even if it does no good, it at least does no harm, an advantage which cannot always be attributed to nerve-excisions.

In Mr. Callender's second case, careful examination led to the conclusion that the diseased action was strictly localized, and that hence a limited amputation of the affected parts would give relief. The result fully justified the operator's expectations, and both this and the preceding case serve well to show what the author wishes to point out, viz.:—

“The desirability of very carefully sifting the symptoms in cases of neuralgia before determining upon a plan of treatment, or before abandoning certain cases as irremediable.”

A Case of Recurrent Tumour of the Breast forms the subject of the next paper, which is contributed by Mr. J. WARRINGTON HAWARD. The patient was

¹ St. Bartholomew's Hospital Reports, vol. vi. p. 41.

² Surgical Observations, with Cases and Operations (Boston, 1867), p. 461. Somewhat similar operations have been performed by Ollier and Busch.

a woman, sixty-four years of age, and three operations had been previously performed, the first growth having been removed thirteen years before. A fourth excision was attempted by Mr. Rouse, but it was found impossible to remove all the diseased structure, and the patient rapidly sank.

"The new growth was soft and easily broken down, chiefly of a pale-red colour (about the tint of a fatty muscle), interspersed with irregular areas of yellow and rusty-brown colour. The yellow portions were rather firmer than the rest. Microscopically, it was seen to consist chiefly of fusiform cells with oval nuclei, imbedded in a scanty, dimly granular matrix. Besides these cells, however, were oval and round cells, and large mother-cells, containing a dozen or more oval nuclei with nucleoli. These last cells were of irregular shapes and dimly granular, and resembled in all respects those described as myeloid."

Or, in the language of the German pathologists, the tumour was a sarcoma, in which the spindle-celled, round-celled, and giant-celled types were mingled. Mr. Haward refers to two other cases of myeloid tumour of the breast, all which he has been able to collect, and in both of which true cancer appears to have been ultimately developed.

The next paper, by Mr. HENRY LEE, contains an account of a *Case of Traumatic Stricture of the Trachea relieved by Operation*. The stricture resulted from the cicatrization of a self-inflicted wound, and the operation, or rather series of operations, in the course of which the upper ring of the trachea was removed, though resulting in the restoration of voice, can only be considered to have been partially successful, as the patient seems to have been obliged to continue to wear a tube.

Dr. MORELL MACKENZIE contributes the next paper, *On the Treatment of Cystic and Fibro-cystic Bronchocele*, which is founded on an experience of eighty-seven cases, sixty-eight of the former and nineteen of the latter variety. In the cystic cases, Dr. Mackenzie empties the cyst with a trocar and canula, and then injects a watery solution of perchloride of iron (3ij to ʒj), plugging the canula, and leaving the solution *in situ* for seventy-two hours. At the end of that time the iron is withdrawn and poultices applied, a cure being eventually obtained by suppuration. One injection usually suffices, but more may be required, and the author advises that the injection should be repeated from time to time, as long as the discharge contains much blood or hæmatin.

"In order to avoid injecting air, I now use a syringe terminating in a long arm or beak, tapering to a point, which is placed at a right angle to the cylinder of the syringe. The piston of the syringe being provided with a stop (near to its proximal extremity) cannot pass down to the end of the cylinder, and the syringe cannot be entirely emptied. In injecting, the conical or tapering point of the syringe passes almost horizontally into the canula placed in the wound, the cylinder of the syringe being nearly perpendicular. In this way any air that is present in the syringe must remain at its upper part, and cannot possibly be injected into the cyst."

Fibro-cystic goitres are treated by Dr. Mackenzie by first curing the cysts in the manner described, and then injecting the fibrous structure with iodine. Extirpation of a bronchocele with the knife is properly regarded by Dr. Mackenzie as a dangerous operation, though he considers it justifiable under exceptional circumstances.

We shall next invite attention to the *History of a Case of Palmar Aneurism, with Notes on the Treatment of Hemorrhage from the Palmar Arch*, by W. H. CRIPPS. The patient was a man thirty-five years of age, and the aneurism originated in a punctured wound, which, from the description given, probably divided the superficial palmar arch. The hemorrhage was profuse, but was arrested by direct pressure with a piece of cork, and on the fourth day the

external wound was found to be completely healed. A traumatic aneurism then rapidly formed, and became more prominent on the *back* than on the front of the hand. The limb was now bandaged by Esmarch's method, and a free incision made in the *dorsal* portion of the aneurismal sac; the source of bleeding could not be discovered, and a plug of lint was therefore introduced, and the hand bandaged. Secondary hemorrhage ensued on the fifth day (the patient losing a pint of blood), and recurred at frequent intervals until Mr. Cripps tied both the radial and ulnar arteries about two inches and a half above the wrist. Two days later the patient bled again, and was then admitted to St. Bartholomew's Hospital, where forced flexion and digital compression of the brachial artery were resorted to, and were continued for seven days. Two days afterwards (eleven days after Mr. Cripps had tied the vessels of the forearm), bleeding began from the *ulnar* artery, and was arrested for forty-eight hours by distal pressure, at the end of which time the lower end of the artery was again ligated. Three days later hemorrhage recurred from the wound in the *hand*, and now the *brachial* artery was tied with two ligatures between which it was divided. Barring a slight attack of erysipelas, the patient had no further trouble, and left the hospital thirty-one days after the last operation.

We have recapitulated with some care the treatment pursued in Mr. Cripps's case, because it seems to us to illustrate well the course which should *not* be pursued under similar circumstances. In the first place, a wound of the palmar arch should unquestionably, as a rule, be treated by the application of double ligatures, and this should, in our judgment, be done even if it were necessary to enlarge the external wound for the purpose; if, moreover, the use of ligatures were for any reason impracticable, pressure should be made, *not* by bandaging a piece of cork over the part, but by applying a carefully made *graduated compress*, so as to bring the force to bear directly upon the bleeding point. Secondly, when a traumatic aneurism follows a wound of the palmar arch, and it is determined to resort to the old operation of laying open the sac, the incision should be made *on the same side as that of the original wound*; we are not surprised that Mr. Cripps failed to find the source of bleeding by making an incision on the dorsum of the hand, nor do we see how a wounded palmar arch could possibly be dealt with successfully by such a proceeding. Lastly, when repeated hemorrhages rendered it necessary to resort to the Hunterian operation, it would, in our judgment, have been better practice to take up the *brachial* artery rather than the radial and ulnar; our reason for this opinion is that, after the latter operation, the collateral circulation in the hand and forearm is so rapidly and fully established, through the medium of the interosseous arteries, that bleeding is very apt to recur (and in Mr. Cripps's case did recur) both from the original wound and from those made in the application of the ligatures.

As regards the general question of the treatment of traumatic palmar aneurisms, we are quite willing to agree with Mr. Cripps that a fair trial of compression should in every case be made before resorting to graver measures; when pressure fails, the choice between laying open the sac and employing some form of the Hunterian operation, should, we think, depend upon the size and character of the aneurism (as circumscribed or diffused), the condition of the superincumbent tissues, etc. Under no circumstances, however, could we think it proper to cut into the aneurism from its dorsal surface.

The next paper gives a *Description of the Sarcotome, an Instrument for painlessly cutting through the soft Tissues of the Body*, and is communicated by Mr. CALLENDER for W. AINSLIE HOLLIS, M.D. Cantab. Dr. Hollis's *sarcotome*, which from his description impresses us as being more ingenious than

practically useful, acts by means of a steel spring which keeps constantly tense a ligature placed around the part to be divided.

Dr. JOHN W. OGLE contributes, in the next paper, a *Case of Pyæmia, the Cause of which remained undiscovered; Termination by Thrombosis of the Veins of one Leg*. This case reads to us like one of urethral or genital pyæmia, such as is occasionally met with as a sequel of gonorrhœa or stricture, but it is not mentioned whether any investigation of the urethra was made; a chart is given showing the variations in the patient's pulse and temperature during the course of his illness, from which he ultimately made a good recovery.

The last paper which is specially interesting to surgeons is called *Cases of Sterility after Lithotomy*; by W. F. TEEVAN. We have heretofore had occasion to remark upon Mr. Teevan's fondness for making public the unfortunate results of other surgeons' operations (see No. of this Journal for April, 1874, p. 458), and were therefore not surprised to find in his present paper a record of four cases in which lithotomy in the hands of surgeons other than himself was followed by sterility.

"It would appear," says Mr. Teevan, "that all these patients, who were operated on by the lateral method, were injured by the operation. The stone did not seem to be large in any case. What was the cause of the affliction? To me the answer seems clear. The operation, as usually performed, involves a laceration of the floor of the prostatic urethra, and as a result the ejaculatory ducts are torn across, or their orifices are plugged with inflammatory exudation in the process of healing. Occasionally the prostatic splits in its roof, and hence the ducts escape any injury."

That sterility is an occasional sequence of all the perineal operations for stone has long been known; it now remains for Mr. Teevan to ascertain the proportion of cases of sterility caused by the ordinary mode of operating, and then to ascertain and candidly publish the proportion of cases which occur after the operation by free incision of the prostate, as practised by himself; his conclusions will then have some scientific value, and not merely serve, as does his present paper, to throw discredit upon the practice of other surgeons, and to indirectly advertise his own superior skill.

J. A., JR.

We shall next call attention to the medical papers in the volume, and first among these is a report by Dr. TILBURY FOX, on a *Case of Parasitic Sycosis* which he saw in consultation, and which illustrated the relation between this disease and ordinary ringworm of the surface. Parasiticides having been used with only slight benefit, Dr. Fox suggested depilation, and in connection therewith the use of a weak nitric oxide and ammonia—chloride of mercury ointment.

The second communication is from Dr. C. THEODORE WILLIAMS, and contains details of several *Cases of Spasmodic Asthma treated with Hydrate of Chloral*. It has already been fully noticed in the number of this Journal for January, 1874.

Dr. REGINALD SOUTHEY reports a case of *Bright's Disease in a Syphilitic Subject* in which death occurred from intercurrent peritonitis. This Dr. Southey regards as a much less frequent complication of diseases of the kidneys than either pleurisy or pericarditis, but it is certainly met with in a larger proportion of cases than he seems disposed to admit. A few days before the patient's death, his temperature was observed to be very high, being on one occasion 106°. Inasmuch as so high a temperature is unusual in either peritonitis or Bright's disease, and as there was inflammation of the fæces, together with patches of redness distributed over the surface of the body, Dr. Southey is inclined to refer this symptom either to scarlet fever, or to rheumatism, which

he believes was a still further disturbing element in the case. Appended to the report is a table showing the condition of the urine from day to day.

Dr. C. THEODORE WILLIAMS communicates for Dr. H. GUINIER, of Caunterets, France, a short paper *On Laryngeal Gargling*, which has already been noticed in the number of this Journal for January, 1874.

Under the name of *Anorexia Nervosa*, Sir WILLIAM GULL describes a condition generally occurring in young women, although it has been observed in men, and frequently mistaken for tuberculosis, but differing from this by the pulse, which is infrequent, being as low as 56 in some of the cases he reports, by the breathing, which is rather slow than accelerated, and by the cleanness of the tongue. All the symptoms, he thinks, may be explained by the anorexia which leads to starvation and depression of the vital functions. The want of appetite is due, he believes, to a morbid mental state, for he had not observed, in the cases that have come under his observation, any gastric disorder to which the want of appetite could be referred. Its origin is therefore, in his opinion, central, and not peripheral. "That mental states," he continues, "may destroy appetite is notorious, and it will be admitted that young women at the ages named are specially obnoxious to mental perversity." In another part of his paper he says that anorexia nervosa is "essentially a failure of the powers of the gastric branches of the pneumogastric nerve."

The treatment required is obviously, he says, that which is fitted for persons of unsound mind. The patients should be fed at regular intervals, and surrounded by persons who can exercise moral control over them; relations and friends being generally the worst attendants. The inclinations of the patient in regard to food should be in no way consulted.

Dr. GEORGE JOHNSON reports several *Cases of Poisoning by Homœopathic Concentrated Solution of Camphor*. This so-called homœopathic preparation was submitted to an analytic chemist for examination, who found it stronger than the spiritus camphore of the British Pharmacopœia in the proportion of $7\frac{1}{2}$ to 1, containing, as it does, an ounce of camphor to $1\frac{1}{4}$ ounce of spirit. The amount taken of this by the four patients who came under Dr. Johnson's observation varied from 25 drops to a teaspoonful. In a case, the history of which is added by Dr. CLIFFORD ALBUTT, 20 drops were given in two doses in the course of a short time. The symptoms produced were burning pain in the mouth, fauces, and pit of the stomach, giddiness and numbness, and tingling of the arms and legs, with loss of muscular power. In one case paralysis of the left leg and arm persisted some time after the acute symptoms had disappeared. In several of the cases convulsions occurred. Dr. Johnson is inclined to think that when the spirituous solution is mixed with water (and it was taken in this way in all his cases), the camphor is precipitated in a state of very minute subdivision, and is in a condition more favourable for rapid absorption than when it has been taken in a state of coarse powder.

Dr. F. E. ANSTIE communicates a *Remarkable Case of Death from Meningeal Congestion without Inflammation* occurring in a lad 13 years of age, who came first under Dr. Anstie's observation in consequence of enlargement of the cervical glands, which it was thought might be due to mumps. It proved, however, to be nothing but an ordinary swelling of the glands, possibly from cold, and certainly not dependent upon sore throat or diphtheria. Twelve days later Dr. Anstie found him unable to stand, although, when seated, he could perform most of the movements of the lower limbs fairly enough. He could not discover then or subsequently that there was any interference with sensation, but there was a slight tingling feeling in both his feet, and also in his hand. There was not the slightest feverishness, either subjective or as tested by the thermo-

meter; the face was pale, the eyes were bright and clear, the tongue was clean; there had been no sickness and no headache, nor the slightest loss of intelligence. There was partial loss of power in the upper extremities. The paralysis gradually increased, at last invading the muscles of respiration. Death occurred from accumulation of liquid in the lungs about fifty-three hours after the loss of power was first noticed. At the autopsy great venous congestion of the spinal as well as the cerebral meninges was found, greater, Dr. Anstie says, than he has ever seen in any other case. In particular it was noticed that the lower petrosal sinus was so tensely full, that when pricked it squirted blood almost like a living artery. The brain itself was perfectly healthy, and there was congestion of no other organ except the lungs. Dr. Radcliffe, in his article in Reynolds' *System of Medicine*, speaks of dull spinal pain as being a prominent symptom in congestion of the spinal meninges, and of an excess of cerebro-spinal fluid as being always found after death from this disease, but neither of these was present in the case which Dr. Anstie reports. No satisfactory explanation of the attack could be given. The lad had previously been healthy, and was the child of healthy parents.

A second communication from Dr. GEORGE JOHNSON is entitled *Cases of Temporary Albuminuria, the Result of Cold Bathing*, in which he shows the albuminous condition of the urine frequently occurs after prolonged bathing in cold water, and, if the bathing is frequently repeated, may continue for some time. In one case reported by him, it lasted for three months. The urine under these circumstances may contain as much as one-sixth of albumen. He adds that he has seen sufferers from Bright's disease who have sustained serious injury from the indiscreet employment of cold sitz baths in a hydropathic establishment, and he suspects that in some instances that method of treatment has been the originating cause of serious renal disease.

Dr. R. DOUGLAS POWELL gives the details of *Three Cases of Aneurism of the Aorta, the Result of Rheumatism and its Complications*. The first of these, he thinks, illustrates what he believes to be a fact, that inflammation may extend from the endocardium to the commencement of the aorta, and thus be the predisposing cause of aneurism. There is often in cases of this disease, when occurring in young persons, a history of at least one attack of acute rheumatism, but no importance appears to have been attached to this by writers on aneurism. To explain the origin of the disease in the remaining cases, Dr. Powell proposes a more mechanical theory. After speaking of the tendency in aortic regurgitant disease to the supervention of hypertrophy of the left ventricle, he says: "Hence we have the volume of blood more rapidly and forcibly propelled against the first portion of the aorta than is natural. But with the recoil of the great vessel the blood flows not only onwards, but also backwards thorough the valves; hence the aorta is more abruptly and completely emptied than natural. We have thus the aorta at one moment in a comparatively empty and flaccid condition, deprived of that column of blood which should equally divide and distribute the force of its recoil; at the next moment this flaccid vessel is suddenly stretched by an undue volume of blood sent with increased force from the hypertrophied ventricle." The effect of this increased shock is to strain the aorta, and to produce in it atheromatous changes. Further, the same cause continuing to act may lead to the production of aneurism. Dr. Powell has added, in his paper, a fourth case to the cases originally reported to the Society.

Dr. THOMAS BUZZARD contributes two papers to the volume. The first of these contains the report of *A Case of Double Facial Paralysis, with Paralysis of Four Extremities: General Anæsthesia, Imperfect Paralysis of Respiration*

and Deglutition, Paresis of the Bladder; Recovery under Anti-syphilitic Treatment, the leading features of which are very clearly indicated in the above summary. The patient had had a chancre fourteen years before coming under Dr. Buzzard's care. Notwithstanding this lapse of time and the absence of any of the more usual signs of suffering from the constitutional affection, he is inclined to look upon the disease in this case as a manifestation of the syphilitic diathesis; the seat of the lesion being the dura mater lining the basilar process of the occipital bone, and a certain portion of the vertebral canal at its upper part. This view of the case is not unlikely to be the correct one, since inflammation of the membranes in these regions might give rise to all the symptoms which he records. In favour of this view is also the success of the treatment, which consisted in the administration of the iodide of potassium, at first in 10 grain doses three times a day, increased at intervals to 20, 30, 40, 50, and eventually to 60 grains at a dose, three times daily. The increase was regulated by the progress of the patient. If after improving for several days, whilst taking a certain quantity, his progress appeared to come to a standstill, the dose was enlarged, and this always appeared to give a fresh impetus to his recovery. After he had been taking 60 grain doses for some time, he ceased to improve and he was then ordered hyperdermic injections of solution of mercury of the kind devised by Dr. Staub,¹ of Paris, the quantity used being 5 minims, which was gradually increased until it reached 25 minims. A little local irritation was produced by the injection, but no abscess ever occurred and no salivation was produced by it. Two other theories suggest themselves in regard to the nature of this case. One is that the patient was suffering from diphtherial paralysis; the other, that the symptoms were dependent upon the presence of tumours in the pons Varolii and cord: but Dr. Buzzard believes that neither of these is so well founded as that to which we have already referred. Before concluding his paper the author gives the history of a very similar case reported by Dr. O. Bayer in the *Archiv der Heilkunde*, 1869.

Dr. Buzzard's second paper is entitled *Case of Tumour in the Left Hemisphere of the Cerebellum, with smaller Tumour in the right half of the Medulla Oblongata*. The principal symptoms in this case were pains in the head, extending from the vertex down the occipital region, attacks of vomiting, a peculiar paresis of all four extremities, not accompanied by paralysis of any cranial nerve, convulsive seizures, double optic neuritis and absence of psychical disturbance—symptoms indicating, the author says, with sufficient clearness, the existence of a cerebellar tumour. The patient's history showed that he had a decided hereditary predisposition to phthisis, and this enabled Dr. Buzzard to make a correct diagnosis, during life, as to the nature of the tumours. A tumour as large as a Maltese orange was found in the substance of the left hemisphere of the cerebellum, and one about the size of a hazelnut in the right half of the medulla oblongata, at the point of emergence of the hypoglossal nerve, which was very much reduced in size—a fact which fully accounted for the paralysis and progressive wasting of the right half of the tongue.

¹ The following is the formula for this, which is called a solution of the alkaline chloro-albuminate of mercury:—

No. 1.—Hydrargyri perchlor. 1.25 gramme; Ammonii chloridi, 1.25 gramme; Sodii chloridi, 4.15 grammes; Aquæ destill. 1.25 gramme. Dissolve and filter.

No. 2.—Dissolve the white of an egg in 125 grammes of distilled water. Filter.

Mix the two solutions and filter. One gramme of this solution contains 5 milligrammes of mercury, or ten minims will contain nearly $\frac{1}{16}$ of a grain of the mercurial salt. The medium dose is one centigramme daily, in two injections.

Dr. W. CAYLEY communicates the history of a *Fatal Case of Hemoptysis*, in which the exciting cause of the hemorrhage appears to have been a blow from the fist which the patient received below the right breast. Little importance was attached to this at first, but the same evening he suddenly coughed up about half a pint of fluid blood. The case ran a very rapid course, terminating fatally in about two weeks. At the autopsy an abscess was discovered situated in the attachment of the diaphragm to the cartilages of the ribs on the right side in front. The right pleural cavity contained two pints of fluid, of which the upper part was nearly clear while the lower consisted of thick pus. Imbedded in the lower lobe of the right lung was an opaque, yellow, caseous nodule, evidently of old date, about the size of a hazelnut. Scattered throughout the upper and middle lobes were groups of very minute, gray, miliary granules of quite recent origin. There were old fibrous adhesions between the liver, spleen, diaphragm, and the surrounding parts. Scattered over the peritoneal surface of the liver were several minute, gray, tubercle granulations. Dr. Cayley indulges in some speculations in regard to the pathology of the case, but to follow him in these would require more space than we have at our command. In brief, they may be stated as follows: The blow may have been the true cause of death by giving rise to hemorrhage, which in its turn excited inflammation and the eruption of tubercles; or the abscess and plenrisy may have caused the tuberculosis by infection, or it may be that the occurrence of the hemorrhage and the subsequent symptoms so soon after the blow may have been nothing more than a coincidence. It is singular that it does not appear to have occurred to him that the old caseous nodule in the right lung may have been the infecting foyer. The patient had a decided hereditary tendency to phthisis.

Dr. JULIUS ALTHAUS's communication on *Paralysis of the Radial Nerve from an Unusual Mode of Lead Poisoning* has already been noticed in the number of this Journal for July, 1874.

Dr. HERMANN WEBER is the author of an interesting paper on the *Communicability of Consumption from Husband to Wife*, in which he subjects the histories of 68 persons, male and female, who, with a more or less pronounced consumption, have married healthy partners. One or several of the partners of 10 out of these 68 cases became consumptive. The question takes, he says, a different aspect if the originally tainted husbands and wives are considered separately. Of 68 persons 39 were husbands, 29 wives. Only one of the husbands of the 29 wives became diseased, while the wives of 9 out of the 39 husbands became affected. These 9 husbands lost 18 wives, viz.: 1 lost 4 wives, 1 lost 3, 4 others lost 2 each, and 3 only 1 each. The cases of these are reported in full. In every case the wife was free from hereditary tendency to phthisis, and, at the time of her marriage, a healthy woman. In concluding his paper Dr. Weber says these cases support the probability of the communicability of consumption from husband to wife, for in the 51 marriages between diseased husbands and healthy wives, referred to by him, 18 wives became consumptive after marriage. In comparing this with 51 marriages between healthy husbands and wives, we certainly do not find such a proportion of consumption amongst the wives. In regard to the much greater frequency with which the disease is communicated to the wife than to the husband the author says that this cannot be explained solely by supposing that the wife contracts the disease in nursing her husband, for the husbands were, in the cases reported by him, with scarcely an exception, regarded as in good health, not one of them being confined to the house. A much more likely cause would be given, he thinks, in the seminal fluid, either by impregnation and infection

through the foetus, or by the mere absorption of the fluid. Dr. Southey, with whom he has discussed this subject, thinks the infection through the foetus the most probable source of communication, and judging from his present data, it does seem that wives who do not become pregnant are more likely to escape infection. A remarkable point in the history of these wives is the great rapidity with which the disease ran its course, the duration not exceeding eighteen months in any, and being below twelve in five of them. On the other hand, the disease in the husband was chronic. Only one of the husbands was decidedly syphilitic.

Dr. BURNEY YEO reports a *Case of Loud Musical Cardiac Murmur, probably produced by Rupture of Aortic Valve*, in which the patient himself heard the sound. It was at first perceived after falling or sliding down a flight of stone steps, and was often so intense as to keep him from sleeping. In a quiet room it could be distinctly heard at a distance of three feet from the patient's body. The sudden observation of this murmur by the patient himself immediately or soon after an accident in which great muscular effort was put forth—for he tried to save himself by holding on to the iron railing—the situation of maximum intensity of this murmur, the second right costal cartilage, its peculiar musical tone, and its wide diffusion, all point, in Dr. Yeo's opinion, to a traumatic lesion of the aortic valve as its cause.

After briefly reporting a *Case of Favus of the Scalp (Tinea favosa)*, Dr. DYCE DUCKWORTH calls attention to the infrequency of the disease in London as compared with Edinburgh and Glasgow. For instance, he has met with only 6 cases out of 5000 cases of skin disease of all kinds seen during the last four years at St. Bartholomew's Hospital, whereas Dr. McCall Anderson, of Glasgow, met with no fewer than 156 in 10,000 dispensary cases.

The result in Dr. DONKIN'S *Case of Diabetes successfully treated by the Skim-milk Method*, confirms the favourable impression we had formed of it. The patient, a man aged 37 years, was passing, at the time he came under Dr. Donkin's care, from 2500 to 3000 grains of sugar in his urine, notwithstanding that he had been for at least four months restricted to a diet from which starch and sugar were excluded. But under the skim-milk treatment¹ the glucosuria was entirely removed within sixteen days, together with all the symptoms of the disease; this effect being followed by the restoration of the health and strength of the patient and the recovery of his flesh. He was able within a year of his recovery to resume an almost ordinary mixed diet, without experiencing a return of his disease. Dr. Donkin, before concluding his paper, refers to a case recorded by Dr. W. J. Fyffe in the "Army Medical Report" for 1871, in which this treatment produced a great diminution in the amount of sugar excreted daily, and to another reported by Dr. Halberstadt, of Pottsville, in the *Transactions of the Medical Society of the State of Pennsylvania* for 1872, in which it was followed by a permanent cure.

The *Case of Acute Rheumatism attended by Cerebral Symptoms without Hyperpyrexia*, which forms the subject of a communication from Dr. GREENHOW, differs from the cases reported in previous volumes of these *Transactions* by the absence of hyper-pyrexia. It therefore confirms the opinion expressed by Dr. Weber, that the hyper-pyrexia in cases of rheumatism with cerebral symptoms is not the cause but the effect of the brain paralysis. It moreover shows that it is an effect which is not invariably produced. There was in this case a choreal affection of the left hand, a symptom which was not observed in two

¹ For a full notice of this treatment, see number of this Journal for April, 1872, p. 498.

other cases under Dr. Greenhow's care, nor in any of the cases published in these *Transactions*. No influence can be fairly attributed to an injury to the head, which occurred ten years before coming under the reporter's observation, and from which the patient had made a good recovery.

Dr. ARTHUR TREHERN NORTON reports two *Cases exemplifying Acute and Chronic Catarrh of the Tonsil*, a disease which, he says, may be recognized as an inflammation of the secreting surface of the tonsil, and is totally distinct from inflammation of the parenchymatous structure of the gland in its causes, in every symptom, in its treatment and results. Comparing the acute forms of the two diseases, the following differences are observed:—

TONSILLITIS.

Catarrhal.

A mucous inflammation.
Three or four days' duration under treatment.
Cause.—Exposure, draught, damp, cold, etc.
Great depression, often profuse perspiration.
Pulse small and quick.
Both tonsils affected.
Never goes on to abscess.
Lacunæ filled with masses of morbid secretion resembling ulcers.
Little or no œdema around.
Treatment.—Tonics and stimulants from the first, with astringent gargles.

Parenchymatous.

A fibrous inflammation.
Two to four weeks.
Often neighbouring inflammation, cutting wisdom teeth, etc.
High fever, with hot, dry skin.
Strong, hard, as in fibrous inflammation.
More often one tonsil affected.
Commonly runs on to abscess.
Often covered with lymph, but no collection of secretion in lacunæ.
Extensive œdema.
Antiphlogistics and depressants, never gargles.

In an article *On a Cretinoid State supervening in Adult Life in Women*, Sir WILLIAM W. GULL describes a peculiar condition he has met with in five cases, two of which were under his own care. The following notes of one of these will perhaps give our readers as clear an idea of the condition as a more lengthy description: "Tongue large; false teeth cannot be worn, as tongue is bitten by them. Lips large, thick, of a light rose (venous) tint. Features broad. Tissue under eyes loose, suggesting œdema. Fine delicate rose-tint on cheeks. Hair soft. Neck thick. Skin and subcutaneous textures lying in resisting folds. Hands broad and spade-like, the textures suggesting œdema, but not pitting. Much subcutaneous fat on chest, abdomen, and extremities. Thighs 39 inches in circumference. Mind generally placid and lazy, but liable to being occasionally suddenly ruffled. Heart's action and breathing normal. Urine normal. Catamenia continue rather profuse." In the other cases the patients had ceased to menstruate, and it is not impossible that the changes which occur in women about the time when the menses cease to appear had more to do with the production of this condition than Dr. Gull appears to think. In regard to the treatment, he says: The best suggestions I can make are to let events take their course, maintaining the strength by simple regimen and fresh air, and by the occasional or more or less continuous use of such remedies as quicken the peripheral venous circulation.

J. H. H.

ART. XXV.—*Transactions of the Obstetrical Society of London.* Vol. XVI.
For the year 1874. 8vo. pp. 275. London: Longmans, Green & Co., 1875.

At the annual meeting in January, Dr. EDW. J. TILT, the President, delivered the usual address, which upon this occasion was short, and mainly devoted to obituary notices of members deceased within the year, and to matters of public medical interest, local in character. The number of members is stated at 656, and the minutes show an average attendance of 33 to 55. Dr. Tilt dwelt at some length upon the necessity of compulsory education for English midwives, and gave a statement of the efforts that had been made to have the necessary bill passed by Parliament, and what steps had been effected towards it. We quote an important passage, as follows:—

“While our legislators have been careful to protect the life of the immature burden of a woman’s womb, they are obtusely negligent of the risk to life incurred by thousands of poor women, able to safely bring forth perfect children if they had been only provided with fairly educated midwives. Again, this legislator is so impressed with the sanctity of life that, should a woman condemned to death be found pregnant, he postpones her execution until the child be born, supplying her with skilful attendance and every comfort, and yet he cares not how many thousand poor hard-struggling and uncomplaining women about to be confined, are handed over to the tender mercies of incompetent women, whose ignorance is often alike fatal, whether rashness prompts them to expedite labour, or fear compels them to let slip the proper time for action.” (page 25.)

On the Necessity for Caution in the Employment of the Intra-uterine Stem. By ARTHUR W. EDIS, M.D.—Dr. Thomas, of New York, in his recent edition, speaking of the intra-uterine or stem pessary, says that “it has been found to cause peritonitis and death in a number of instances, and in consequence it has been almost entirely abandoned. A faithful trial of the instrument for twenty years by capable practitioners in different parts of the world has not resulted in a verdict in its favour.” (page 3.) “The more I see of cases of flexion, the less do I feel disposed to insert stems,” “except after careful preliminary treatment and supervision of the patients.” (page 4.)

Dr. Edis reports four cases in proof of his position, viz.: No. 1, sterile, ten years married, 32, subject to dysmenorrhœa, cook. Was thirteen weeks in bed after use of stem pessary, with violent symptoms, then twelve weeks in hospital; out of place two years: and still suffering from uterine enlargement, adhesions, and pains in defecation, with frequent calls to urinate, accompanied with severe smarting pain, nearly five years afterwards. No. 2, 29, married two years and a half, suffering from cervico-endometritis, uterus slightly anteфлекed. Use of stem followed by pelvic cellulitis, the womb becoming fixed by surrounding deposit, causing much distress by pressure on neck of bladder. No. 3, 30, sterile, married six years, uterus anteфлекed, and posteriorly to it a cyst the size of an orange, supposed to be the left ovary. Patient anxious for family; sound passed several times, then stem inserted; well for three weeks, then feverish symptoms followed by an attack of pelvic cellulitis confining her to bed nearly two months. No. 4. 23, married three years and a half, one premature birth; had dysmenorrhœa from anteфлекion and chronic metritis. Treated with use of iodide of potassium, occasionally leeching, use of graduated bougies, etc., until dysmenorrhœa ceased. Patient anxious for family; os divided by urethrotome and silver stem passed. Twenty-three days after introduction had a rigor; pulse ran up to 132, and temperature to 103½° Fahr.; stem removed

at end of a week when apparently doing well, collapse set in suddenly, and she died in a month from the day of insertion. No post-mortem allowed. Collapse supposed to indicate the bursting of an abscess into the peritoneum.

Dr. Savage said that seven fatal cases had been brought to his notice, and remarked that uterine tolerance was very capricious; and that the employment of the stem, no matter what its shape, size, or character, was always attended with risk, and should never be resorted to without the opportunity of frequent watching. They might be tolerated for days, weeks, or even months, and then signs of severe pelvic mischief might supervene.

On the Management of Difficult Labour with a Minor Degree of Contraction of Brim. By A. B. STEELE, L.K.Q.C.P.I.—The contra-indications of turning under any circumstances are stated to be as follows, viz.: “1. A conjugate diameter narrowed to less than three inches. 2. Firm and close contraction of the uterus round the child. 3. Impaction, or very firm settling of the head in the brim of the pelvis. 4. Marked exhaustion or prostration of the mother.” Craniotomy is said to be fatal to the mother in one out of five cases, and turning one in fifteen or sixteen.

Quite an excitement was produced at the meeting in March, it having been announced that a certain Mrs. Anderson would be a candidate for election to fellowship, and 106 fellows were present. After a long discussion, it was decided, with but one dissenting vote, that the by-laws did not allow of the admission of women.

On the Propriety of Administering Iron during Pregnancy as a Preventive of Post-partum Hemorrhage. By JOHN BASSETT, M.D.—The author introduces his remarks by stating that he had had a wide experience, and had “carefully watched all the phenomena connected with flooding for a period of more than five and twenty years.” He claims that women who are subject to post-partum hemorrhage will generally be found to exhibit signs of defective health during the pregnant state, as shown by dyspeptic symptoms, weak muscular fibre, easy fatigue, nervousness, antipathy to animal food, etc.; and that such cases are greatly benefited by preparatory medical treatment.

“As regards the method carried out I have usually advised my patients to see me when a little more than seven months advanced in pregnancy, and earlier than this if they found anything amiss with themselves; I have then prescribed iron in combination with an acid or an alkali, as the circumstances seemed to indicate; if the arterial tension justified and the secretion from the kidneys was defective, potash was usually administered; if, on the other hand, the liver appeared to be sluggish and the skin sallow, then soda was preferred; in other instances when pain was complained of, and an acid was grateful to the palate, the tincture of steel was ordered with hydrochloric acid and columba.”

Dr. Barnes spoke of the supposed danger of abortion from the use of iron, but had given it in numerous instances with safety, and believed it a safe remedy where anæmia was present in pregnancy.

On Lymphangitis in Pelvic Pathology. By EDWARD JOHN TILT, M.D.—This monograph by the President occupies 36 pages of the Transactions, and being in a measure a new subject, cannot be satisfactorily condensed; we must therefore refer the student of uterine pathology to the original, appended to which he will find the names of twenty-six authors quoted, with the titles of their works. The question of the origin of acute inflammatory attacks in the uterus and its appendages, is one of great pathological interest, although in the treatment, it is not very material whether the disease commences in the lymphatics, veins, or both. We may no doubt have septic poisoning from both, or either; but which is more frequently primarily affected is difficult to deter-

mine positively and satisfactorily. If it could be made clear that erysipelas was merely inflammation of the ultimate reticulation of the cutaneous lymphatics, then we would have reason to believe that puerperal peritonitis, from its intimate relations with this disease, might have a similar pathological character. Dr. Tilt says, page 133, "On finding post-mortem evidences of phlebitis, the pathologist did not look for lymphangitis which often coexists; pus in small lymphatics was overlooked, and when met with in large lymphatics, they have been actually mistaken for veins." This refers to the examinations of forty years ago. He also remarks of phlebitis, that it afforded so satisfactory an explanation of many diseases, and was so comparatively easy of anatomical demonstration, that it became recognized as the best explanation of a host of morbid phenomena.

On Vaginismus (Dyspareunia of Dr. Barnes). By Dr. W. SCHUEGIERIEF, Physician to Moscow Hospital.—Dr. S. claims that this diseased condition was first described in 1860, by Dr. Simpson, in paper entitled "Vaginodynia, or a painful vascular and fascial contraction of the vaginal canal," the year before Dr. Sims presented his account to the Obs. Soc. Lond. The pathological conditions are differently stated by the two writers, the former giving two varieties of the disease, one due to excessive sensibility and spasmodic contraction; the other to an irritating eruption, erosion, or some pathological condition of the mucous lining of the vagina or vulva. Dr. Sims considers the disease to be an extraordinary hyperæsthesia of the hymen and vulvar entrance connected with a strong and involuntary spasmodic contraction of the sphincter vaginæ.

Dr. Schuegierief reports three cases bearing upon the pathology of the disease, viz.:—

No. 1. Unmarried; æt. 30; hymen normal in appearance; complained of urination being stopped by sudden violent pain in the genitals with spasm of the urethra, after the subsidence of which, the urine could be again passed until the same spasm arrested it, and so on for several times until the bladder was emptied. Catheterism gave no pain; health not impaired; when the edge of the hymen was touched at the middle of its free portion, and at two other points with a sound, a spasm with pain was produced, and the urethra closed upon the catheter or violently pushed it out if but slightly introduced. Urine dropped upon the same points produced a similar result, and accounted for the difficulty during urination. Except at the three sensitive points found, the hymen was normal as to sensibility. It was not inflamed or eroded, and the orifice of the urethra was neither red nor swollen.

No. 2. Married four years and childless; æt. 20; spasm of vagina came on after an illness when six months married, attended with convulsions and syncope as the result of intercourse. Fourchette, posterior commissure, and fossa navicularis found red, eroded, and sensitive; mouth of vagina red, swollen, and partly excoriated. Under anæsthesia, uterus found slightly retroverted, noted subacute vaginitis, cervix and canal covered with livid œdematous granulations partly covered by pus.

No. 3. Married five years; æt. 25; no complete sexual intercourse to date. Found no hymen, meatus urinarius normal as to appearance and sensitiveness; labia minora likewise. "In the groove between the large and small labia, nearer to the latter on the posterior part of the vulva, eight scattered papillæ could be detected; their ends were widened and ramified, even and rough from the loss of the epithelium." These bodies were exquisitely sensitive to the touch, causing the patient to shriek with pain. Their removal was effected under complete anæsthesia, but required the aid of two assistants, three strong midwives, and two nurses, to hold the patient, who after the operation stated that she had felt no pain. The bodies removed were the remains of the hymen, and their ablation cured the woman effectually.

Cases of Retroversion of the Gravid Uterus. By HENRY GERVIS, M.D.—This paper of ten pages, with eight pages of discussion upon it, constitutes one of the most valuable articles in the Transactions. Dr. Gervis reports three cases, all of which had their uteri replaced after catheterization, but two of them ended fatally. Dr. Simon, of Jamaica, reports one case with a favourable result, and mentions a marked protrusion of the perineum as a diagnostic sign. Numerous others were mentioned by the parties in the discussion, most of which by early recognition and relief had terminated favourably. A difference of opinion was expressed as to the importance of the knee and elbow position in replacement, some regarding it as indelicate, objectionable, and non-essential, whilst others thought the aid of gravity important, and outweighing the indelicacy of the position. The danger of this form of retroversion appears to lie in the injury done to the bladder, setting up gangrene of its mucous lining and retrograde damage to the kidneys, with shock and exhaustion due to blood-poisoning from septic infection. No case of rupture was mentioned, and it is doubtful whether this is one of the dangers to be apprehended, although stated to be by Dr. Rigby. According to Dr. Barnes, blood-poisoning is the chief danger; to Dr. T. Smith, peritonitis and irritative fever; to Dr. Ramsbotham irritative fever and local mischief.

R. P. H.

ART. XXVI.—*St. George's Hospital Reports.* Edited by JOHN W. OGLE, M.D., F.R.C.P., and TIMOTHY HOLMES, F.R.C.S. Vol. VII., 1872-4. 8vo. pp. xii., 396. London: J. & A. Churchill, 1875.

A PERIOD of two years has elapsed since the publication of the sixth volume of these reports, and just as it seemed probable that the series was not to be further continued a seventh volume is issued from the press. This is made up partly of papers of a practical character, the outgrowth of the experience their writers have gained in the wards of the hospital: but partly also of articles better fitted for the pages of a medical journal. For this reason we think the present volume will not be found so valuable as some of its predecessors.

In accordance with our custom, we shall discuss the medical and surgical papers separately.

The first of the former is by Dr. EDWARD T. WILSON, and is entitled *Questions connected with Vaccination*, in which the writer shows very clearly that if vaccination is less protective than formerly, it is due simply to the fact that the rules Jenner laid down for its performance are not so carefully followed as they should be. He recommends a frequent recourse to animal vaccination, very great success having attended this practice in Russia. He also recommends that several insertions should be made; since experience has shown that the liability to smallpox is inversely as the number of cicatrices.

Dr. JOHN CAVAFY contributes a paper *On the Effect produced on the Capillary Circulation by the Injection of Putrid Fluids into the Lymphatic System of Amphibia*, in which he shows that the injection of putrid animal fluids in relatively small quantity into the lymphatic system of amphibia is followed by inflammation, which is not to be distinguished from inflammation produced in other ways, except by the fact that it supervenes more rapidly. Larger doses act as a direct poison to the nervous system, causing paralysis of the heart, with consequent general circulatory stasis.

Dr. J. C. J. FENWICK communicates a report of *Three Cases of Cerebral Disease, with a table of Cases of Tubercular Meningitis*, fifty-four in number. Of these, seventeen occurred in the first ten years of life, eighteen in the second period, thirteen in the third, two in the fourth, four in the fifth, and none later. In the fifty cases in which a thorough post-mortem examination was made, disease of some other organ was found in forty-six, and of the lungs in forty-five.

The next three papers are on subjects connected with midwifery, and may therefore be conveniently noticed together. The first of these, by Dr. B. G. LEE, appears to be nothing more than a syllabus of the author's course on obstetrics. In his *Notes of some Cases of Death after Confinement*, Mr. CLEMENT WALTER gives the details of a slight epidemic of puerperal fever which occurred in the hospital attached to the Dover Union, and which followed an outbreak of erysipelas in the surgical wards immediately below the rooms occupied by the lying-in women. The poison was conveyed, it was thought, to the upper wards through the drain-pipes. The last paper is by Mr. R. P. WINTLE, and consists of some brief *Notes on Midwifery*, containing details of 650 cases. In this connection we will call attention to the report of *A Case of Puerperal Blood-Poisoning*, by Mr. H. FLY SMITH, which ended favourably, although for some days the patient's life was in great danger. There was, Mr. Smith thinks, metritis in addition to the blood-poisoning. The thermometer twice indicated a temperature of over 108° Fahr. The treatment consisted principally in the administration of two grains of quinia and twenty minims of the tincture of the chloride of iron three times daily.

Dr. EDGAR G. BARNES, in the course of an article *On the Concurrence of Zymotic Diseases*, goes into an elaborate calculation to show that epidemics of two or more of these diseases coexist with greater frequency than would be the case if there were no affinity between them, or if the conditions favourable to the development of one were not also capable of promoting the spread of another of them. In some cases the excess of the actual concurrence over the calculated concurrence was over 50 per cent., and in no case was it under 15 per cent. Measles seem to have an especial tendency to concur with each of the other zymotic diseases, the six largest percentages of excess in his tables being the six into which measles enters. His conclusions confirm the popular belief that "whooping-cough and measles always go about together."

In some remarks which follow the report of twelve *Cases of Psoriasis*, Dr. C. HANDFIELD JONES calls attention to the fact, which we believe is generally recognized by dermatologists, that the eruption of psoriasis may present very considerable resemblance to a tubercular syphilide, and that in cases where no other symptoms of syphilis exists, or has existed, and where contamination in the ordinary way seems impossible. This resemblance, he says, is a significant feature, but cannot be admitted to prove identity, not even when its evidence is corroborated by the beneficial effect of mercury. A great variety of treatment was employed by him; in one case, in which there was a gouty history, colchicum effected a cure, after the more ordinary remedies had failed. In another, antimony was used with advantage. In a third, phosphorus; in a fourth, sulphur-baths; and so on. The necessity for having recourse to these different remedies shows that the disease is not always dependent upon the same cause. He regards psoriasis as essentially an inflammation in which there is a tendency to the formation of scales. There is in this disease and in pityriasis, he thinks, a more persistent deviation, or tendency to deviate from normal modes of life than in most of the other forms of cutaneous eruption. In some of the cases the patients were hereditarily predisposed to the disease.

Dr. W. B. CHADLE's paper on *Exophthalmic Goitre* is really supplementary

to one in Volume IV. of this series, which was noticed in the July number of this Journal for 1870. Including one rather doubtful case, seven additional cases are reported. Among them is a group of cases which possesses great interest from the fact of their occurring in persons of the same family, viz., in a woman and her two nieces, while another niece was the patient in the doubtful case just referred to. In the only case in which any improvement seemed clearly dependent on treatment, the tincture of iodine was given in wine of iron, at first ten minims of the former to a teaspoonful of the latter three times daily, but later the quantity of iodine was increased to fifteen minims. Unfortunately the relief did not prove to be permanent, but, notwithstanding this, Dr. Cheadle believes that this treatment will be found generally more useful than any other. The fact of the occurrence of the disease in several members of the same family supports the view that it is a pure neurosis, which, like other neuroses, is liable to be hereditary.

Dr. JOHN W. OGLE contributes two papers to the volume, both treating of diseases of the abdomen. The title of the first is *Illustrations of some of the more Unusual Forms of Disease of the Abdomen, with Comments on Fistulous Openings through the Walls of the Cavity*. This is the longest of the medical papers, and is, we think, the most valuable, containing, as it does, the reports of several very interesting and rare cases. The first two of these are very fully reported, and were believed by Dr. Ogle to be cases of abscess originating from inflammation of the peritoneum and finally pointing externally. In both instances recovery took place after the abscess had been opened. In one case iodide of potassium was given for several days before the operation, but no traces of iodine were found in the fluid evacuated. The author refers to several other cases also illustrating the tendency which purulent collections within the abdominal cavity have to point externally. Among them will be found cases in which the abdominal abscess has been due to one or other of the following causes: diseases of the abdominal or pelvic viscera, extra-uterine foetation, perforation of the bowels, peritonitis, and hydatids. He also calls attention to the fact that spontaneous evacuation of the fluid in ascites through the abdominal walls may occasionally occur, and says that, taking the hint from nature, Dr. Sims advocates the use of the ordinary lancet for opening the abdominal walls at the umbilicus in place of the trocar in the operation of paracentesis. He also alludes approvingly to Dr. Risdon Bennett's plan of introducing a drainage-tube and of thoroughly washing out the abdominal cavity in cases of chronic peritonitis. When speaking of this treatment the latter gentleman says that "he has seen cases of extensive tubercular peritonitis where life appeared to have been considerably prolonged owing to the drainage of the effusion by a spontaneous opening through the abdominal walls."

The second paper contains a report of *Two Cases of Carcinoma within the Abdomen, with Observations on Pain as a Result of Pressure on Nerves*. In one case the diagnosis was rendered easy by the presence, in the abdominal cavity, of a tumour as large as an infant's head. The patient herself was ignorant of its existence, and referred all her sufferings to the left thigh and knee, which was rigidly flexed, any attempt to straighten it causing great pain. After death the whole of the left iliac region and part of the hypochondrium were found occupied by a large fluctuating tumour, which was attached to the bodies of the three last lumbar vertebræ. On cutting through its attachments to these, they were found to be very carious, a great part of the bone being absorbed. The case affords Dr. Ogle an opportunity of referring to other cases in which violent neuralgia of the head or extremities has been due to central disease, and he cautions us against being too readily satisfied with the diagnosis

of rheumatism which has been made in cases of locomotor ataxia. Intense pain in the sciatic and obturator nerves is often produced by pressure of an aneurism in the abdomen, of feces in a loaded bowel, or of a pregnant uterus.

In the second case cancer was suspected, but insomuch as no tumour could be detected, the diagnosis was not positively made out during the life of the patient. Her chief symptoms were depression of mind, want of appetite, green vomit, obstinate constipation, and paroxysm of acute abdominal pain, at a spot rather above and to the right of the navel, later shifting to the region of the right kidney. After death the posterior wall of the stomach was found cemented to an elongated irregular scirrhus tumour, occupying the site of the pancreas, involving the coeliac artery and plexus, compressing, but not quite obstructing, the intestine at the junction of the duodenum and jejunum, and surrounding the vena cava.

In a communication *On Consumption, a Form of Septicæmia*, Dr. WILLIAM MARCET gives his reasons for regarding phthisis, which he apparently does not distinguish from tuberculosis, as really due to blood-poisoning. "Before phthisis, or rather its acute or active stage, sets in, it is now," he says, "generally acknowledged that there must be either a tubercular or pneumonic deposit in one or in both lungs." . . . "It is obvious," he goes on to say, "that so long as people with deposits in their lungs continue healthy, the present abnormal material undergoes nutrition, otherwise it must be subjected to physical change; but this new formation, which appears to be possessed of no particular function, and must be much less abundantly supplied with vessels than healthy tissue, cannot have so active a nutrition as that of the pulmonary tissue in the sound state, and it may be safely inferred that trifling circumstances, which would exert little or no influence on the normal process of nutrition, might seriously interfere with that of such growths. Among these circumstances must be mentioned, in the first place, the presence of decomposing organic matter in the air breathed, which, acting on the abnormal material as it would on non-living organic matter, arrests the nutrition of that material and generates septicæmia." The most efficient means to prevent this result is, in Dr. Marcet's opinion, to cause the removal of the patient to a high locality, somewhere on the hills at a station between 300 feet and 500 feet higher than that where he may be residing.

Mr. S. W. MOORE contributes an experimental paper entitled *Notes on Iodate of Calcium, Camphorated Phenol, and Salicylic Acid as Disinfectants and Antiseptics*. We shall give the conclusions he has reached in regard to these substances as far as possible in his own words. He has found that the iodate of calcium is certainly opposed to the development of chemical decomposition in organic fluids, but is uncertain whether it does this by virtue of its own inherent power, or by the development of free iodine by decomposition. It is an efficient local application, but produces too much pain for the comfort of the patient. In cases in which it was administered internally, in doses from two to four grains three times daily, it invariably improved the tone of the system to such a degree, that the pulse and temperature uniformly fell to the normal standard. In regard to the camphorated phenol, he says, as a deodorizer, it is not so powerful as carbolic acid, and probably as a disinfectant it is less potent. Some few experiments were made with it in dressing wounds, but it did not exceed the usual carbolic dressing in effects, and is more costly. It is, however, less irritating, and may be given in larger doses than the phenol alone. The third substance, salicylic acid, entirely arrests the action of ferments and also prevents their development. In arresting the discharges from diseased surfaces and in inflammatory processes, it is said to be most useful.

In a communication headed *On Certain Drugs—their Value*, Mr. ALLAN D. MACKAY gives us, in rather a rambling manner, the results of his experience with various medicines. We do not find anything at all suggestive in it, and we shall therefore dismiss it with this brief notice.

Dr. W. OGLE contributes *A Simple Mode of Tabulating Symptoms in Clinical Records*; with a schedule for taking cases, for which he claims the advantage of allowing the symptoms in any clinical record to be clearly tabulated, under any number of headings, without destroying the continuity of the history. It would be impossible in any way, short of reproducing it here, to give our readers a clear idea of its character.

Appended to the volume are the usual tables, with reports of the medical cases treated in the hospital during the years 1872 and 1873. There is also a report of cases admitted into the obstetrical department. J. H. H.

Turning next to those articles which are particularly addressed to surgeons, we come first to a paper on *The Principles of Ophthalmic Therapeutics*; by R. BRUDENELL CARTER, Esq. This paper, as we are informed in a foot-note, is extracted from a forthcoming volume of "Essays on the Diseases of the Eyes." Success in treatment, as justly remarked by the author, depends in a great measure upon the surgeon's ability to recognize the *causes* of disease, and to address his remedies accordingly. In addition to the two great classes of eye affections, those of local and those of constitutional origin, Mr. Carter is disposed to recognize

"A third class also, in which the origin of the affection for which we are consulted is neither local nor constitutional, but only remote; in which some derangement of nervous function, possibly central, possibly occurring at a point intermediate between the centre and the periphery, determines a series of perversions of nutrition which eventually declare themselves by the production of physical changes, and constitute something which we call disease. I have come to regard," he adds, "many forms of variation of tension, or of inflammation of the iris or of the cornea, much in this way; that is, as expressions of a departure from the normal innervation of the affected parts. They are, I think, essentially neuropathic in their character, differing from neuralgia chiefly in this respect—that abnormal tissue change, instead of abnormal sensation, is the manner in which the malady declares itself."

Mr. Carter gives several cases to illustrate his doctrines as to what he proposes to call the "neurotic forms of ophthalmia," and terminates his paper (which, if somewhat out of place in a volume of hospital reports, is, notwithstanding, both interesting and valuable) with some practical remarks upon the treatment of eye-affections, and particularly upon the administration of iodide of potassium and mercury, the use of atropia, the application of the compressing bandage, the employment of the artificial leech, etc.

The next paper for our consideration is the *History of a Case of Unreduced Dislocation of the Hip-joint*; by SAMUEL LEE. The patient whose history is here narrated was struck by the buffer of a railway carriage, sustaining, among other injuries, a backward dislocation of the right femur, and died from shock on the day following the occurrence of the accident, no attempt having been made to effect reduction of the displaced bone. A post-mortem examination was made thirty-six hours after death, when

"The head of the femur was found to be situated below the pyriformis muscle and immediately behind the acetabulum, the capsule of the joint being freely lacerated all round, a small portion only remaining attached to the femur in front and behind; the ligamentum teres was torn off close to its attachment to the femur, its connection with the acetabulum being undisturbed. On dis-

section, the muscles surrounding the joint were discovered much stretched, but no laceration could be detected. The cartilage covering the head of the femur was intact and the cotyloid ligament uninjured. On manipulation, the muscles were found to be the main obstacles to reduction."

Mr. Lee refers to the dissections of similar cases published by Cooper, Scott, Quain, and Billard, but does not mention that which was recorded a few years since by Mr. MacCormac, of St. Thomas's Hospital, nor the less recent reports of Mr. Syme, Dr. Hutchison, and Dr. Lente, of New York, and Dr. Fenner, of Louisiana.

The next paper, and one which may be profitably studied by every surgeon, is *On Pulsating Tumours which are not Aneurismal, and on Aneurisms which are not Pulsating Tumours, being a Contribution to the Diagnosis of Aneurism*; by T. HOLMES. The author (who, by his recent lectures on aneurism, published in the *Lancet* and other London journals, has established a claim to be considered one of the highest living authorities in this difficult branch of surgery) begins by referring to certain cases of mistaken diagnosis which have now become historical, and then alluding to the learned paper published by Dr. Stephen Smith, of New York, in the number of this Journal for April, 1873, "the effect of which would," he fears, "be to relieve medical practitioners of some part of the burden of responsibility justly attaching to those who commit errors, often leading to a fatal result, from neglecting some of the well-known methods of surgical examination," adds:—

"I would merely say, for my own part, that, though fully convinced of the reality of the difficulty, and even of the impossibility in some cases, of deciding whether a swelling is or is not an aneurism, yet I cannot admit that the diagnosis is so far obscure that a man can plunge a knife into an aneurism, and his patient bleed to death, without at any rate a very strong *prima-facie* presumption of gross and criminal negligence being raised against him. . . . It is a strange doctrine that a man should be held innocent who opens a fluctuating tumour close to a large artery, by a 'bold' plunge of the knife, without having ever listened for a bruit. . . . I should almost think this remark too trite and obvious if it were not that it disposes at once of a great many, if not the majority, of the cases of mistaken diagnosis."

Mr. Holmes next quotes a most instructive case recorded by Pirogoff, in which that distinguished surgeon hastily, and, as he himself candidly confesses, carelessly, cut into a femoral aneurism under the impression that it was a collection of pus; and then proceeds to analyze the cases collected by Dr. Smith, in the paper already referred to, adding: "I submit, therefore, that this collection of cases shows that the diagnostic symptoms of aneurism are often overlooked rather than that they are untrustworthy."

Still, even with the most careful examination, it is not always possible to avoid an error in diagnosis, and Mr. Holmes details several cases, some of them hitherto unpublished, in which, on the one hand, non-aneurismal pulsating tumours were mistaken for aneurisms, or in which, on the other hand, aneurisms were present, but were not recognized. Referring to the use of the aspirator in doubtful cases, Mr. Holmes suggests that in many instances "the withdrawal through a small puncture of a moderate quantity of the blood in the sac would do a great deal of good—would relieve the tension and postpone the time of rupture," and mentions a case under the care of Dr. Gairdner, in which a man suffering from aneurism of the aorta had derived manifest benefit from occasional external hemorrhages; and another, at St. Thomas's Hospital, in which an aortic aneurism had been tapped "with at any rate immediate good results." That the loss of blood may be of service in many cases of aneurism, has been known since the days of Valsalva; but Mr. Holmes must

pardon us for saying that we think the requisite amount of blood might be more safely drawn by venesection than by tapping the aneurism itself; possibly the same relief from tension would be afforded by the loss of a smaller quantity of the circulating fluid, if taken directly from the aneurism; but this advantage would, we should fear, be more than counterbalanced by the risk of setting up inflammatory changes within the sac.

In terminating our notice of Mr. Holmes's very valuable communication, we cannot do better than to quote the conclusions which his paper is meant to enforce. These are as follows:—

"1. The difficulties in the diagnosis of aneurism, although they are real enough, are not so frequent as might be inferred from the statements of some authors, provided that all the means of examination are carefully employed. Most of the errors which are recorded have depended on the omission of stethoscopic examination, or occurred before the invention of the stethoscope.

"2. Of tumours which pulsate, but are not aneurisms, some are abscesses, and others pulsatile cancers. The diagnosis of the former is generally possible, with careful examination, since they can hardly have a true aneurismal bruit unless they communicate with the artery, when they would become aneurisms; but the diagnosis of the latter is often attended with the most serious difficulties, though on carefully and repeatedly examining the symptoms the proper diagnosis can usually be made.

"3. The occasional occurrence of aneurisms which do not pulsate and have no audible bruit is a motive for the greatest caution in opening any presumed abscess in the situations where such aneurisms may be found, and justifies an exploratory puncture. Such exploration is more likely to do good than harm if the swelling should turn out to be an aneurism. [To the latter part of this conclusion we, for reasons already given, cannot assent.]

"4. In these more difficult cases it is necessary, not merely to ascertain the existence of the ordinary symptoms, such as pulsation and bruit, but also to compare their degree with that which might have been expected if the tumour were aneurismal."

Flat-foot is the subject of a short paper, which is communicated by Mr. CHARLES ROBERTS. Mr. R.'s observations were chiefly made while assisting Dr. Bridges and Mr. Holmes in investigating the effects of factory work upon the health and development of children engaged therein, and his conclusion is that flat-foot is the result of physical exertion disproportionate to the age and development of the child, and that, though more common in debilitated subjects, it is yet quite compatible with a healthy constitution. Mr. Roberts properly condemns the putting of children to any task or employment which necessitates prolonged standing, and urges the importance of providing them with well-fitting, broad-soled, and low-heeled shoes.

The *Reports of Surgical Cases* for the years 1872 and 1873, the former by Mr. J. W. HAWARD, and the latter by Mr. E. R. ROWLAND, contain, as usual, a large amount of material of much interest and value to students of surgical statistics. We observe in the former report the record of a case of amputation at the hip-joint nearly twelve weeks after excision of the head of the femur, in a child four years of age. The operation, which was performed by Mr. Holmes, terminated fatally. The present writer has collected references to *thirteen* cases in which amputation subsequent to hip-joint excision has been resorted to, and *ten* cases of hip disease in which amputation has been employed as a primary measure. Seven of the former category and six of the latter are known to have terminated successfully, making the mortality of the whole twenty-three, but a little over forty per cent.

We trust that in future volumes of the *St. George's Hospital Reports* the surgical papers may be more numerous, and not less valuable, than in that which we now close.

J. A., JR.

ART. XXVII.—*The West Riding Lunatic Asylum Medical Reports.* Edited by J. CRICHTON BROWNE, M.D., F.R.S.E. Vol. IV. 8vo. pp. 317. London: Smith, Elder & Co., 1874.

THE opening paper of the present volume is an address delivered by Dr. WM. B. CARPENTER, at a medical *conversazione*, held at the Asylum in November, 1873. Its subject is the *Physiological Import of Dr. Ferrier's Experimental Investigations into the Cerebral Functions*. The writer modestly deprecates criticism by the statement that for several years his time and attention have been largely occupied by official duties, and his leisure hours by studies other than physiological. The chief value of the address, we believe, is to be found in the endorsement which it gives to the claims and conclusions of Dr. Ferrier. The judgment of a physiologist so widely known and trusted as Dr. Carpenter is of no mean weight to the author or the reader who finds himself in almost untrodden fields.

Beginning with a condensed and lucid presentation of existing knowledge as to the structure and functions of different elements of the nervous system, the speaker describes a few typical experiments of Ferrier, and proceeds to set forth conclusions which he believes to be legitimately drawn from these.

The experiments themselves, he believes, were made with sufficient care, and repeated with such uniformity of result as to warrant their reception as thoroughly genuine and trustworthy. He agrees with Ferrier in believing that changes in the blood-supply are the constant and essential medium through which stimuli of all kinds act upon the brain. Increased function of any part implies and is consequent upon increased blood-circulation in that part.

Dr. Carpenter thinks that these experiments prove beyond a doubt the proposition that the cerebrum [cortical substance], like lower nerve-centres, has a reflex activity of its own. When irritation of a portion of cerebral surface causes, in an animal profoundly stupefied by chloroform, movements such as normally express emotion or intelligence, it does so through the same cerebral changes as, in a normal and conscious state, result from impressions received through the senses and reflected into expressive motion. In other words, increased blood-circulation in a certain convolution will surely produce motion of a certain definite and invariable character, whether due to impressions naturally conveyed and consciously received, or to artificial stimulus wholly unrecognized by consciousness. Much light is thrown by these experiments on what we call automatic action, and unconscious cerebration. This power of reflex activity, without consciousness, Dr. Carpenter illustrates by the case of the over-wearied parliamentary reporter, who, suddenly awakening from a brief oblivion, found to his surprise and pleasure that he had not ceased from noting the debate.

Dr. Ferrier's results confirm views long held by Carpenter, that the cortical ganglion does not exert its power directly upon the motor nerves themselves, but mediately through the motor centres at the base of the brain.

Much new light, too, is thrown upon the perplexing subject of "crossed action," by some of these experiments.

Dr. Carpenter does not perceive that any inferences as to the localization of different intellectual faculties, or mental states, can as yet be drawn from these investigations.

Taking as text and illustration a case of recovery from *double optic neuritis*, Dr. J. HUGHLINGS JACKSON earnestly advocates the invariable use of the oph-

thalamoscope in all cases of disease of the nervous system. Optic neuritis is one of the most important signs of intra-cranial disease. Unfortunately for the patient, however, a very severe degree of inflammatory action may arise, and continue for some time, without any failure of vision and without any symptom likely to direct attention to the eye. Extraordinary as it seems, in such forms of disease as are described and pictured by Dr. Jackson, affecting both eyes, he has not once only, but often, found perfect vision in the severest cases. Hence, if we neglect to examine the interior of the eyes, we are liable to miss for days or weeks the earliest and surest sign of intra-cranial disease, and to lose that precious period of early treatment which might save vision and life itself.

The case described was seen by Dr. Jackson some weeks after head-symptoms had begun. All indications pointed to some syphilitic growth or deposit within the cranium. The fundus of the eye was completely altered, with disk much enlarged, gray, and prominent. Yet the patient could read the smallest type, denied any trouble of vision, and had no febrile action. Perfect recovery, from the neuritis and from the other symptoms, followed a course of iodide of potassium.

The writer argues with great cogency that if we wait for symptoms of neuritis to appear, the mischief already done may probably be irreparable. If in all head affections we inspect the posterior chamber we may sustain or correct our diagnosis; and possibly detect, in time for treatment, a symptom which would become of itself a very grave disease. The case is a most instructive one, and fully justifies the lessons drawn from it.

Dr. FERRIER contributes a valuable paper upon *Pathological Illustrations of Brain Function*. From the case-books of the Asylum he quotes the records of some half-dozen fatal cases of cerebral disease in which autopsies were had. Brief comments are then made to show the connection between the symptoms during life and the localized lesions found after death. Some epileptic cases support his conclusions, drawn from experiments upon brutes, as to the convulsions having their origin in the superficial portions of the hemispheres.

The writer takes occasion here to defend his observations from the attacks of those who deny the possibility of localizing and limiting the electric irritation of the brain. He shows very conclusively, we think, that such irritation can be, and has been sufficiently circumscribed for all practical purposes. Some pains are taken also to explain the sense in which he has used the words "motor centres" in relation to portions of cortical substance. In this part of the brain, a motor centre is a source whence issues a mandate which calls into orderly activity the lower ganglia to effect some definite movement.

One of the cases having included aphasia among its symptoms and presented extensive disease of the left anterior hemisphere, gives rise to some very thoughtful and discriminating remarks. That the power of using words should depend upon the integrity of the left rather than of the right speech-centre Dr. Ferrier attributes to the force of habit, education, and those other occult causes which make us right-handed or left-handed. This theory would of course account for the occasional reversals of the rule, and for partial recovery in some cases. Provided the faculties in general are not weakened, the formerly inactive centre upon the right side may gradually learn to do the work which the greater aptness of its fellow had monopolized before becoming diseased.

As to the exact site of the speech-centre, Dr. Ferrier's experiments and researches have led him to fix upon the *operculum*, just over the island of Reil.

The Urinology of General Paralysis is the title of an article by Dr. JOHN MERSON, one of the Asylum staff. It gives the results of observations upon

the urine of twenty-one general paralytics, together with parallel examinations upon the excretion of six healthy attendants, subjected to similar conditions. The researches seem to have been conducted with extraordinary care and the minutest attention to every detail which might affect the uniformity of conditions and the accuracy of results. That these results are not apparently very remarkable, or practically suggestive, is no fault of the industrious and conscientious observer. In each case—with some indicated exceptions—all the urine of three successive days was examined. In twelve of the cases the patients were then put upon the use of Calabar bean, and the analyses were repeated. Three were put upon alcohol, and the examinations again made.

The results as stated by Dr. Merson are these: 1. Urea varies above and below the average of health; in most cases considerably increased. 2. Chlorides and phosphoric acid notably diminished; sulphuric acid about normal. 3. Specific gravity varies within wider limits than in health; mean not materially different. 4. Absolute quantity a little less than in the six healthy men, but, allowing for weight, a little in excess. 5. Calabar bean diminishes all solid constituents considerably, especially urea. 6. In the three cases treated with alcohol, both amount of urine and of solid constituents, especially of urea, were diminished.

Dr. J. MILNER FOTHERGILL has prepared an elaborate article on *Cerebral Anæmia*. It is an admirable monograph, and will richly reward perusal. We despair of being able to present here anything more than the skeleton of it.

In showing the possibility of variation in amount of blood within the cranium, much importance is attached to the recently discovered peri-vascular canals or spaces.

The conditions and causes of cerebral anæmia are stated as: general anæmia, spanæmia, unfilled vessels, heart-disease, pressure on vessels, embolism, venous stasis, apoplexy, gouty spasm, organic disease involving vessels, vaso-motor disturbance, and lastly, medicinal agents. The mode in which each of these antecedents acts is exhibited with great clearness. The criticism might be made, however, that two or three of these conditions are not strictly deficiency of blood, though practically equivalent in effect.

For diagnostic purposes, the writer divides cerebral anæmia into acute and chronic. Among the marks of the latter condition he notes the dilated pupil, pallor of face, and the dead-white, dull eye, uniformly diffused grayish tint of both optic disks, usually feeble heart-action, with small and compressible pulse, coldness and often lividity of hands and feet, and many other manifestations of an ill-nourished system. The conjunction of diurnal drowsiness and nocturnal vigilance is noted, and its postural explanation guardedly admitted. Dull headache, constant at the vertex, is mentioned as of much diagnostic import. Intestinal torpor and fulness may be either cause or consequence of the anæmia.

Mental inactivity or weakness, with perhaps occasional periods of irritability; loss of power for continued thought; depression of spirits, are the principal psychological symptoms of deficient blood in the brain. These soon pass, if the case persists, into melancholia, with or without delusions or hallucinations, and end in dementia.

A distressing and not uncommon consequence of cerebral anæmia, Dr. Fothergill believes to be the resistless craving for stimulants met with in debilitated and bloodless women. Religious anxieties and delusions are also often due to the same condition.

The anæmia may be partial or local. As different parts of the brain are chiefly supplied by different arterial trunks, pressure, obstruction, or other

causes may act upon one and not upon all. Profound depression of spirits, with entire clearness and strength of intellect, is referred to as probably a result of such a condition. The writer lays considerable stress upon the especially close nerve-connection which exists between the liver and the posterior lobes of the cerebrum. The vaso-motor nerves of the latter locality are principally supplied from the inferior cervical ganglion of the sympathetic; and this ganglion is in peculiarly close relations with the vaso-motor system of the liver. In consequence of this connection, irritations of the nerve-fibres in the latter organ are communicated to those which by governing the vertebral arteries control the amount of blood sent to the posterior cerebrum. This portion of the brain is believed to be the chief emotional centre, according to Schroeder v. d. Kolk and Laycock. The other parts of the cerebrum are supplied by other arteries, controlled by vaso-motor fibres from other ganglia.

The latter pages of this essay are occupied with prognosis, and with judicious suggestions as to treatment.

Dr. WILLIAM T. BENHAM, Pathologist and Assistant Medical Officer of the Asylum, presents the results of some most ingenious experiments, made to ascertain the *Therapeutic Value of Cold to the Head*. The results are certainly rather startling. It is pretty conclusively shown that ice-bags to the shaven scalp produce a slight cooling of the brain by reflex action (none by direct conduction); a slight diminution of bodily temperature generally, and a slight decrease in the frequency of the pulse; but that these effects are "*so insignificant in degree and temporary in duration*," as following any safe continuance of treatment, as not to warrant the trouble and discomfort which attend upon the application.

Ice to the head does undoubtedly lessen the amount of blood passing through the vessels of the scalp; but must thereby increase the vascularity elsewhere. The writer queries whether diminishing the calibre of the terminal branches of the external carotid may not produce increased blood-pressure in the ramifications of the internal carotid.

The reactionary effect which follows the intense action of cold on the peripheral nerves must also be remembered.

Such sedative influence as is often undoubtedly exerted by cold applications to the head must be through the nervous rather than the vascular system. The method of its action is imperfectly understood.

T. LAUDER BRUNTON, M.D., contributes a thoughtful article upon *Inhibition, Peripheral and Central*. Throughout the human organization the power to check and control is no less important than the ability to excite. Any manifestation of the former, whether in the physical, mental, or emotional nature, may be considered a form of inhibitory action. The writer, therefore, does not confine himself to the influence of certain nerves, in removing the contraction of bloodvessels, or in neutralizing the action of certain ganglia, but considers the subject in its broadest aspect and its different phases.

While the paper is well adapted to enlarge our views of the scope and function of this special form of nervous activity, we cannot say that we find this very obscure and difficult subject treated here with entire clearness. But even if our judgment upon this point be correct, the effort is a very able and commendable one.

Dr HERBERT C. MAJOR, of the Asylum staff, and a frequent contributor of valuable articles to former volumes, presents some *Observations on the Histology of the Morbid Brain*. The cases here examined were those in which senile atrophy had occurred. No change strictly pathognomonic was discovered. Certain pathological alterations will be pretty uniformly found in

the cortical substance in these cases; but very similar ones may be observed in other forms of cerebral disease. That particular lesions of the brain-substance will ever be found to mark and differentiate each variety of brain-disease, Dr. Major very justly doubts.

The nerve-cells of the frontal and parietal regions are the ones most affected. These are found pretty uniformly changed throughout the whole depth of the gray matter. It is perhaps in the large, pyramidal cells, midway through the cortical substance, that the changes are most marked and constant. The layers or rows of small, round cells, are modified to a less extent. The number of these last, however, is often found much diminished.

The greatest and most constant lesion is a granular degeneration of the large cells. The great pyramidal cells first lose their distinct and more or less triangular outline, and appear swollen or inflated. The long processes are generally lost or diminished in number. The nucleus also loses its angularity, and becomes swollen and rounded. As the disease progresses a granular deposit appears, within the cells, or without, or both. Soon the swollen cells break down, leaving each a sort of hole or gap containing a nucleus and granules. Later the granules often disappear, leaving the nucleus alone. This body itself, though longest lived, usually passes through a rounded and swollen, to a granular condition.

The appearances described, and those of the same structures in health, are admirably shown by plates.

Note is made of the exceptional appearance and the histological importance of hypertrophied or "giant" cells. The regularity of arrangement of brain cells in rows or layers, is much disturbed in advanced atrophy. The capillaries are dilated, and present minute granules and crystals of hæmatin deposited on their walls, especially at bifurcations. The peri-vascular spaces are enlarged. The fibres of the gray matter become coarser than is normal, and very crooked and irregular. The neuroglia becomes atrophied and finally broken down into molecular *débris*. Its corpuscles are somewhat increased in number, and at the last become shrivelled and atrophied.

The conscientious care with which Dr. Major shuns hasty conclusions or unwarranted inferences cannot be too highly commended.

An essay by Dr. ROBERT LAWSON, of the Asylum staff, upon the *Hourly Distribution of Mortality*, contains much curious information. Patients prostrated by chronic disease are in greatest danger of death during the early morning hours. Especially, then, should we aim to support them at this period. Acute diseases have their periods of exacerbation, in addition to the physiological depression of the early morning, both of which should be remembered in treatment.

Dr. BROWNE, editor of these Reports and Chief Officer of the Asylum, gives us a graphic picture of *Acute Dementia*. Commonly a disease of youth, and perhaps more frequent in females than males, the writer believes it usually unconnected with hereditary weakness. Physical debility or exhaustion, with a life of monotony and mental inactivity, are the combined circumstances credited with its causation. Masturbation is believed by Dr. Browne sometimes to produce it. It not unfrequently occurs as a sequel to typhoid fever, and other exhausting maladies.

The onset of the disease may be very gradual, or it may be sudden with transient excitement. The description of its phenomena, not being especially novel, calls for no comment.

The reality of the disease, and its difference from atonic melancholia, are insisted upon.

The writer believes, though upon very little presented evidence, that atony and venous accumulation affecting the vessels of the pia mater, is the physical condition of this mental malady. The disease being eminently curable, and never causing death while still acute, certainty as to the cerebral state is difficult to attain.

Practical hints as to treatment are very good.

As if to strengthen the previous paper in its weak point, there follows an article by Dr. CHAS. ALDRIDGE giving the results of *Ophthalmoscopic Observations in Acute Dementia*. Dr. A. will be remembered as a reporter of much good work with his favourite instrument, in previous volumes. Owing to the comparative rarity of typical cases of this form of disease, the results of only about fourteen examinations are given. In these anæmia of the optic disks was uniformly observed. Both disks are equally affected with evenly diffused grayish pallor. The retinal vessels are small and shrunken, but not tortuous. In these two points the appearances differ from those of atrophy, in which the pallor is a dead white in spots, but not evenly diffused, and the vessels are often somewhat tortuous. In very extreme cases œdema was sometimes present. This condition gradually disappeared with convalescence.

Dr. Aldridge argues that known analogies indicate that the bloodless state of the disks affords a pretty correct index to that of the cerebral convolutions.

With the cases of acute dementia are reported two of atonic melancholia, in which also some degree of anæmia existed.

A second paper by Dr. BENHAM treats of the *Actions of Nicotine*. Experiments upon small animals indicate that this drug does not kill by arresting the heart's action. On the contrary, it seems to act as a powerful stimulant to that organ. Poisonous doses probably kill by rendering respiration more and more shallow. Nicotine seems to affect the heart both through direct stimulation of its intrinsic nerve-centres, and through its power of arresting the inhibitory functions of the vagi. These properties seem to indicate that it should possess therapeutic value.

Applied to the conjunctiva or given internally, it causes prompt but transient contraction of the pupil. In a few experiments upon the effects of the drug taken into the human stomach it was found that small doses—as $\frac{1}{64}$ of a minim—increased the frequency of the pulse; but that $\frac{1}{2}$ of a minim diminished the rate decidedly. The cardiac impulse as measured by the sphygmograph was not diminished by small doses; and in two cases was clearly increased.

Thus instead of the powerful depressant it has been deemed, nicotine in small doses would seem to be a gentle stimulant and invigorant. B. L. R.

ART. XXVIII. — *Sixth Annual Report of the State Board of Health of Massachusetts*. 8vo. pp. 379. Boston, January 1, 1875.

THE current number of this most valuable series opens with a touching tribute, from the pen of Dr. HENRY I. BOWDITCH, to the noble character and eminent usefulness of Dr. George Derby, late secretary of the Board. The duties of his highly honourable and responsible position were performed from the organization of the Board in 1869, till his death in June, 1874, in a manner equally remarkable for ability and for conscientiousness. Fortunate is the State that possesses such citizens, and that is wise enough to secure their services for the public good.

A statement is made of the reasons which have led the Board to refrain from prosecuting some great pork-packing establishments, located in the outskirts of Boston. There was some reason to think that the unwholesome influences complained of were in part due to other causes. It was not deemed wise to seriously injure, if not destroy, an immense business most beneficial to the commercial prosperity of the chief city of the State, when after all it was doubtful if the removal of the business would cure the evils in question. If after other and undoubted sources of baneful exhalations shall have been removed, and after all suggested and possible improvements shall have been made in the methods of conducting the pork-packing processes, the business shall then clearly remain a nuisance, the Board will promptly compel its removal at whatever cost. This forbearance on the part of the Board is justified, and in part caused, by the unquestioned benefit already realized from improvements recently made.

Arrangements have been made throughout the State for a systematic registration of diseases. One hundred and fifteen physicians, in large practice, have agreed to report weekly the number of cases of different diseases which come under their notice. This we believe to be the commencement of a very important work.

The Board still fails to expend the whole of its very modest appropriation of \$5000 per annum. It now asks the privilege of expending its surplus upon books, journals, and maps, to begin a library of sanitary knowledge.

The first special essay in this volume is one upon *Inebriate Asylums or Hospitals*, by the chairman, Dr. H. I. BOWDITCH. While emphatically a temperance man, Dr. Bowditch is not a stickler for total abstinence, nor a believer in prohibitory laws. Not denying the occurrence of intemperance as a manifestation of disease, he yet believes drunkards, in general, responsible and punishable for their conduct. He would first deprive all inveterate drunkards of their civil rights. Then as a moral, an economical, and a sanitary measure he would have the State care for them in asylums especially designed for this purpose. Not only is a confirmed drunkard liable to become a public burden, and to add to the amount of crime perpetrated, but he transmits too often to his offspring tendencies which lead to moral or physical weakness, to insanity, or to crime, in succeeding generations. To prevent these evils it is the right and the duty of society to deprive the drunkard of his liberty, and to take such other measures as are best adapted to regain for him his self-control; or, if this be impossible, to protect himself and his fellow-men from the consequences of continued indulgence.

Some practical suggestions are given as to organization, management, and other details of the proposed asylums. An appendix contains numerical information from some fifty towns as to the proportion of pauperism due to drunkenness.

W. E. BOARDMAN, M.D., contributes a paper upon *The Value of Health to the State*. European statisticians have estimated that every individual loses, upon an average, nineteen or twenty days yearly from sickness. English calculations show that each death represents or implies seven hundred and thirty days of illness. There is reason to believe that the condition of things here is, at least, no better than in England. Taking the entire population of Massachusetts in 1870, the writer estimates from thirteen to nineteen days of illness for each individual. The cost of this amount of sickness in loss of productive industry and in expenses incurred, is calculated at nearly forty million dollars; or fifteen million for the working class alone. It is therefore obvious that the

prevention of sickness is a worthy aim for the statesman and the economist as well as the philanthropist.

The writer proceeds to show that the death-rate, and consequently the amount of sickness, is in Massachusetts not only higher than the normal proportion in a community of ideal health, but also higher than in most other States. Some striking tables are presented to show in a dozen English towns the reduction of total mortality, and of deaths by typhoid fever and by phthisis, following the construction of efficient systems of water-supply and of sewerage. In one instance the deaths by typhoid fell seventy-five per cent. And in another, those by phthisis fell forty-nine per cent. In Massachusetts, constantly increasing density of population in towns and cities, with contamination of air, and fouling of the sources of water-supply, have been the reasons of its high and continued death-rate.

The essay closes with a curious calculation showing that for the purpose of reducing the death-rate from 19 to 15 in one thousand, the State could afford, upon strictly business principles, to incur an immediate outlay of over fifty million dollars.

The subject of the next paper, by J. C. HEADLEY, Esq., is one which especially concerns the denizens of great cities, the *Transportation of Live-stock*. Considerations of economy, health, and humanity alike require that the living animals brought from great distances to our shambles, should arrive in good health and undiminished weight.

The remarkably large and increasing consumption of fresh meat by our people, and the steady diminution of the amount raised in the Eastern and Middle States, make the carrying of cattle long distances a very large and ever-growing proportion of the business of our great railways.

It is probably too true, as assumed by the present writer, that moral or humane motives would not have much effect in securing for these hundreds of thousands of dumb brutes a tolerably comfortable journey from their distant pastures to our abattoirs. The cruel sufferings and wanton tortures of the cattle-cars—too prevalent still, though not so frequent as formerly—are to be prevented by making humanity coincide with interest. With the growing strictness of inspection to which meat is subjected in our Eastern markets, it becomes more and more unprofitable to subject animals to hardships which lower the quality of their meat. And the number of competing lines leads to a rivalry in the delivery of animals with health unimpaired and weight undiminished. A law passed by Congress, in March, 1873, forbidding continuous occupancy of cattle-cars for more than twenty-eight hours together, and requiring five hours' interval for feeding, watering, etc., outside of the cars after every such period of travel, has been pretty generally enforced, with advantage to all. Still, old prejudices, the force of habit, reluctance to sacrifice existing appliances, and the frequent want of far-seeing sagacity, are the causes of much preventable suffering.

The plan of providing for each beast a separate compartment, the writer is disposed to consider undesirable. The increased expense and the great difficulty of loading are, he believes, not compensated for by any proportionate advantages. Repugnance and terror are manifested by cattle driven into these narrow stalls, especially by those animals which have been associated in pairs and which will resist all attempts at separation, and pine if the attempt succeeds. The writer believes that these gregarious animals are happier together; and that when standing moderately close to each other they are more comfortable than when allowed room to stagger about, or supported by hard boards on either side. The chief evils are in placing large cattle in cars too narrow

for the animals' length, constraining the head and neck most painfully; and in changing them, car-load for car-load, from large cars into smaller ones. *en route*. In an over-crowded car an animal lying down dies a cruel death by being trampled upon by his neighbours, the pressure on their outer sides being no longer counterbalanced by his body between them. Such instances are not uncommon. A uniformity of length, and a width of 8 feet, or 8 feet 6 inches, for all cattle-cars, would render it practicable to transport beeves safely and humanely. The number of beasts to each twenty-eight-foot car should be from seventeen to twenty, as they vary in weight from twelve hundred pounds downward. The attempt to get a given weight of cattle on each car leads to cruel crowding when the animals are small. Twenty thousand pounds of small cattle, twenty-five in number, are much crowded in a car that gives ample space to thirteen beasts, each twice the weight, and aggregating eight hundred pounds more.

However perfect and humane may be the system of transportation, it is believed that cattle should never be killed for food at the end of a long journey. A period of rest and good feeding, in the vicinity of their final market, should be required by law. Interest, once enlightened, will then be inclined rather to extend than to shorten this interval. Loss in weight is rapidly made up, and the superior quality of the meat enhances the reputation of the sagacious dealer, and brings him more buyers and better prices.

Swine are good travellers, the most contented beings any way connected with railways, says a witty official. Properly guarded against cold in winter, by bedding, and against heat in summer, by awnings and frequent wetting, they are all the more comfortable when pretty closely packed. They would be better off if not included in the scope of the law just noticed, for their troubles, conflicts, and sufferings occur mostly when unloaded or in transit between yards and cars.

Sheep will occasionally suffocate each other when abundant room is provided. Frequent inspection is the only remedy for this.

Numerous and valuable tables are appended to show the supply and consumption of live-stock at different times and localities.

Some very interesting details of the arrangement and management of several large stock-yards are also given. Hints and suggestions are freely and wisely offered for improving the existing practices, in the interest of economy and of humanity.

As if for a fitting sequel to the above article, the new secretary, Dr. CHARLES F. FOLSOM, has prepared a highly condensed and excellent essay, entitled, *Our Meat Supply, and Public Health*. Believing that a diet partly animal is necessary to the highest physical and mental development and activity of mankind, the writer passes at once to an exposition of the conditions which impair or destroy the dietetic value of the meats in our markets. First, as to putridity, while he allows that whole communities, and even races, have occasionally, or habitually, sustained life and health upon decaying flesh, he nevertheless brings an overwhelming mass of testimony to show that ordinarily and among civilized people the use of such food has produced the most harmful results. The sausage is referred to in this connection as "the grand receptacle of vile meat of all kinds, where it is *spiced into obscurity*." In the last half-century there have died, in Würtemberg alone, from bad sausages, one hundred and forty persons.

A tolerably full sketch is given of the principal parasites infesting domestic animals, with the different stages and fields of their development, the means of

their detection, their influence on the health of brute and man, and the methods of neutralizing or curing their injurious tendencies.

The chief acute and chronic diseases which affect our animals used for food are also described, together with the ill effects known to have followed the eating of the flesh of diseased animals.

The unwholesome character of meat from animals badly bruised, or insufficiently fed, exhausted, worried, terrified, or fed upon improper food, is briefly but effectively set forth. Whatever arguments to the contrary may be adduced from the wholesome character of the flesh of wild animals hunted to death, it is yet certain that the meat of domestic animals, tortured, worried, heated, and exhausted for some hours preceding slaughter, is very often extremely hurtful. Even in the case of game, creatures long hunted have proved poisonous.

The remedies for unwholesome meat are to be found, first, in all the conditions before described which tend to bring the animals in health and comfort to the shambles; secondly, in rigid and thorough inspection, covering every stage from the cattle-cars to the retailer's block and scales. Rules for the management of slaughter-houses are presented; and a device for merciful killing is figured and described. The latter embraces a mask covering the eyes, and a slender spike which quickly penetrates the brain by a single light blow.

Under the general heading of the *Brighton Abattoir*, we find a report of its workings, and its enlargement during the year; the regulations by which it is governed, original and revised; its act of incorporation, and also an act recently passed to incorporate a similar organization for slaughtering swine. There is included also a chemical analysis of "pearl butter," an artificial compound made from suet, and designed as a cheap and innocent substitute for the genuine article. The analyst finds nothing objectionable in it, and credits it with "a pleasant taste, though lacking in the delicate flavour and peculiar taste of real first class butter."

Prof. WM. R. NICHOLS, of the Institute of Technology, contributes an article *On the Composition of the Air of the Ground-atmosphere*. It is not claimed that the facts ascertained have, as yet, any special practical import, though curious, and, like all truth, liable to become valuable. Carbonic acid gas impregnates the air beneath the surface of the ground to a degree much above its atmospheric proportion. Its amount varies immensely in different soils, from four or even eight per cent. in the air of a rich and manured loam, down to seven-hundredths of one per cent. in a pure sand. The amount is greater in summer than in winter; and usually greater as the depth increases. The quantity of oxygen varies inversely with that of carbonic acid; indicating oxidation as the source of the latter. The accumulation or rapid diffusion of the gas, however, is largely influenced by the porosity or closeness of the soil.

An abstract is given of experiments made by Prof. Fleck, at Dresden, upon the ground-air in the soil over graves. Another brief statement of foreign observations relates to the diffusibility of carbonic acid in atmospheric air, and indicates this to be much greater or more rapid than has often been supposed. A certain spring, roofed in and protected from the wind by a close board inclosure, evolves a gas which is 70 per cent. carbonic acid. Yet at the height of three inches above the surface of the water the percentage is already reduced to 31; at ten inches, 23; at forty, 2; and at fifty-five only $\frac{1}{2}$ of one per cent.

An extremely important and suggestive article is contributed by Dr. THEO. W. FISHER, with analyses by Prof. Nichols, upon the *Ventilation of Railroad Cars*. Not only do many of our people pass whole days and nights in rail cars, but vast and increasing numbers use them every morning and evening. The state of nervous exhaustion and lowered vitality consequent upon the cares

and toils of a business day, render the system peculiarly unfit to withstand the noxious influences which are concentrated in the poisoned atmosphere of our railway carriages.

The analyses show a proportion of carbonic acid from twice up to ten times as great as in the open air. In one list of twenty-one experiments, all made in local trains making trips of ten or fifteen miles, occurred four cases of a *percentage* over .30 (twice .36); eight others over .20; and eight more from .127 up to .17. In another experiment on a two-hours ride, the percentage five minutes after leaving the station was .172 and fluctuated from .153 to .194 during the journey, ending at .177. The changes seem to have had some connection with the stoppages. We can conjecture that a stop during which doors were much open might purify the air, while if doors were quickly closed, the diminished ventilation due to loss of the draft caused by rapid motion would naturally intensify the evil.

The smoking cars, while more offensive to the senses, did not prove to contain much more carbonic acid than other cars. Practically, these cars generally had fewer passengers in the same cubic space than the ordinary ones. The cubic feet per passenger, even when the seats were filled, was found to be about fifty in the former and thirty-three in the latter. To secure the degree of purity assumed by physiologists as necessary to health, the entire air of these cars should be renewed every four and three minutes. How far this result is fallen short of, these analyses and every sensitive traveller's feelings can testify.

As compared to the public schools, music halls, court rooms, and theatres of Boston, the car-air averages about double the percentage of carbonic acid.

If any consolation is found in contemplating the miseries of others, the attention may be directed to an observation made in frightfully cold weather in a third-class car [American built] running between St. Petersburg and Moscow. At starting the percentage of CO_2 was .140, while at the end of the ninth hour it had reached .940, and quite passed the physical endurance of the experimenter, who was unable longer to continue his tests. There was no heating apparatus in this car.

The author states what we believe to be sound doctrine when he names forced ventilation by rotary fans or other mechanical device used in connection with steam-heating apparatus, as the only method promising thorough success.

In a paper entitled *Cremation and Burial: an Examination of their Relative Advantages*, Dr. J. F. A. ADAMS presents in the short space of seventy pages a remarkably thorough and impartial discussion of this favourite topic. After a brief introductory statement of the principal arguments for and against each procedure, he proceeds to ask if cremation is practicable and safe, and, if it be, then whether evils arising from ordinary burial are sufficient to call for the disuse of the latter.

A rapid sketch is next given of the practice of cremation and urn-burial among the ancients, together with instances of its occasional employment in modern times.

The arguments, discussions, and practical attempts looking towards the re-introduction of cremation into general use, which have excited so much attention during the last few years, are referred to in detail. The exact methods of proceeding, and the results of the different processes are carefully stated.

The writer now passes to an examination of the circumstances which have led, from early Christian times, to burial in crowded church-yards and within city walls. Ideas connected with a bodily resurrection caused the people to recoil from cremation; while superstitious faith in the outward forms and manifestations of their religion as affording protection from evil spirits, led to

the crowding of the bodies of the dead into the vaults of the church edifice and into the inclosure surrounding it. As the churches and parishes were largest and most numerous where population was most dense, so it came to pass that where the living were in greatest numbers there also the dead did most abound. Evil effects upon public health have long been recognized from the saturation of soil with products of decay, and the consequent contamination of the air and water in the neighbourhood. Striking examples are cited of the manner in which epidemic diseases have been originated or much aggravated by the proximity of old and crowded grave-yards, in the midst of dense population. In the great cities of Europe the evils of intra-mural interments have been pretty generally recognized for fifty or a hundred years past. England seems only recently to have realized the dangers from this source.

At the present time, however, the crowded church-yards have been abandoned for the rural cemeteries. These are on or beyond the outskirts of cities, and are not as yet densely crowded. Interments are carefully regulated, and the grounds are arranged in every respect with reference to sanitary principles. Extensive inquiry and correspondence elicit very little testimony to any injurious results due to such burial-grounds. Wells immediately adjoining graves are found, by analyses made for this article, as well as by foreign observations, to be contaminated. The impurities, however, do not equal in amount those found in many cases where wells are near privies, drains, and barn-yards.

The following are some of the more important conclusions to which the author has come, and the practical suggestions which he makes. Cremation as performed by the Siemens furnace, is cheap, effective and perfectly unobjectionable. Intra-mural burial should be wholly abandoned. Well regulated rural cemeteries are not only harmless but of sanitary benefit, as adding to the public parks. Whatever may be demanded in the near future in England or Europe, there is here no present cause to call for cremation on sanitary grounds. Moreover this process conducted in any other than the best manner would be either costly or offensive, or both. Should cremation be introduced to any extent, its methods, as well as those of burial, should be under the entire control of the boards of health. General laws applying throughout the State should be carefully drawn and strictly enforced for the regulation of cemeteries. A belt of ground without graves, and planted with trees, should surround each ground. Depth and closeness of graves should be fixed, vaults forbidden unless providing separate compartments, wells not allowed near graves; and every other detail provided for. The cost of funerals may easily be diminished by the running of funeral trains on railroads; and by receiving the bodies of the poor in receiving tombs, whence they can be removed to cemeteries by men employed for the purpose.

This article displays extraordinary research, and should attract much attention from persons interested in the discussion. An appended list of the literature of the subject contains the titles and other particulars of some two hundred and fifty books, essays, memoirs, reviews, and addresses, in English, French, Italian, Spanish, German, and Latin.

The usual paper on the *Health of Towns* shows an uncommonly healthy year. A severe epidemic of diphtheria visited some of the river-valleys in the western part of the State. Where it was especially malignant and attacked several members of the same family, some local cause was generally suspected, such as slaughtering and rendering houses. The same connection is noticed several times in regard to scarlatina. Typhoid has very often seemed to have relation to filthy drains, slops, etc., near wells and houses. The reports of correspondents contain much curious and instructive matter.

The volume closes with the report of a committee upon the *Sanitary Condition of the State Prison*. The site is low, and exposed at low tide to noxious emanations from flats upon which sewage is deposited. The mortality has been too great for many years, and has largely increased. The proportion of deaths by phthisis has also increased. And this in the face of constant improvements made in the prison. Compared to old and neglected prisons in Austria, Italy, and France, its death-rate is very small. But compared to the higher class institutions, at home and abroad, it is considerably too great. Upon careful examination and comparison with the conditions in other prisons, the committee fix upon deficient air-supply as the great sanitary fault and source of undue mortality. The cubic feet of air, per man, in the worst wing of the building, is in the corridors 460, and in the cells 171. When steam is shut off, there is no current of air worth mentioning. Twelve tests of air in corridors, close to cell-doors, between 10 P. M. and 5 A. M. exhibited the carbonic acid gas in proportions varying from .084 up to .113 per cent. The school-rooms and work-shops yield as bad and worse results. Though this degree of impurity is no greater than that of many schools, theatres, etc., it is to be remembered that the exposure to it is constant, and not merely temporary.

If we have dwelt at too great a length upon this sixth annual volume, our apology is the unusual value and interest of its contents, which do the highest credit to the Board and its new secretary, Dr. C. F. Folsom. B. L. R.

ART. XXIX.—*Report of the Health Commission of the State of New Jersey.*
For the year 1874. 16mo. pp. 64. Trenton, 1874.

THE object of this Commission, which was appointed at the last session of the New Jersey Legislature, is to ascertain the sanitary needs of the State, to suggest remedies for defects in existing laws and practices bearing upon health, and in general to discover and set forth the things best to be done to promote the sanitary well-being of the people.

While the matter of this Report affords little food for criticism or comment, the manner in which it is presented is admirable. The need, the economy, the functions, and the possible achievements, of health boards and of legislation directed by them, are set forth with equal vigour and clearness. Facts, arguments, testimony, and illustrations are woven into a close and irresistible plea for State superintendence of public health. The moral obligation and the economical expediency are shown to be equally unquestionable.

If this Report does not lead to an immediate organization of a State Board of Health we shall be much disappointed. We earnestly hope, moreover, that the new board may number the author of this Report among its officers, and in a position commensurate in importance with the knowledge of sanitary science which he has here shown. B. L. R.

ART. XXX.—*Lectures on Diseases of the Respiratory Organs, Heart, and Kidneys.* By ALFRED LOOMIS, M.D., Professor of Pathology, and Practical Medicine, in the Medical Department of the University of the City of New York, etc. etc. 8vo. pp. xii., 549. New York: William Wood & Co., 1875.

WE believe that the volume whose title heads this notice is the first Dr. Loomis has published since the appearance of his "Lessons in Physical Diagnosis" in 1868. In a brief review of the latter, in the October number of

this Journal for the same year, we pointed out defects, the results principally of hasty compilation, which decidedly marred its value. In the work now under consideration, the evidences of carelessness in preparation are much less frequent, and if these lectures fail to become popular, it will not be from this cause, but rather because they are not marked by any very striking originality. We fancy their author is, nevertheless, a good instructor; his style is clear and concise, he shows more than a fair acquaintance with the literature of the diseases he discusses, and, moreover, the rules he lays down for their management seem to us to be sound. Thus he strongly inculcates the necessity of always bearing in mind the importance of maintaining the strength of our patient, no matter what the disease may be he is labouring under; in other words, of treating the patient and not the disease, as is too often done. We, therefore, find him constantly deprecating the employment of depleting remedies. While he thus condemns, in general terms, the unnecessary use of drugs, he, however, occasionally recommends a deviation from a purely expectant plan of treatment. For example, in pneumonia with a temperature over 102° Fahr., he prescribes sulphate of quinia in doses of twenty grains daily, believing that it has the power, by arresting molecular metamorphosis, of reducing the temperature of the body. Never having ourselves given this drug in such large doses in this disease, we have only impressions to oppose to Dr. Loomis's experience in this matter, but we cannot avoid stating our conviction, that the cases in which it was thought to have produced favourable results would have done quite as well under a less perturbing treatment.

In the author's opinion, neither diuretics nor hydrogogue cathartics are of much service in promoting the absorption of pleuritic effusions. Unquestionably this is true of many cases, in which it is of more importance to attend to the patient's general nutrition than to attempt, by the administration of these two classes of remedies, to reduce the amount of liquid within his chest; but the employment of evacuants does not exclude the use of tonics, among which iron must be included. We know of no prescription so likely to benefit patients suffering from pleuritic effusions as that which is commonly known as Basham's mixture, which not only contains iron, but is diuretic in its action. Where the breathing is embarrassed from the extent of the effusion, the author recommends the operation of paracentesis thoracis.

A good many lectures are devoted to the subject of phthisis, a disease which the author thinks can be traced in the great majority of cases, if not in all, to inflammation. It will thus be seen that he adopts the views which Niemeyer and other German pathologists have rendered popular. As these have in one shape or another been frequently laid before our readers, it will not be necessary to repeat them here. They are gaining ground with clinical teachers as well as with pathologists, and the day is not far distant when the theory that the lesions of phthisis are due to a specific deposit from the blood, will be generally abandoned.

The subject of the concluding lectures is *Diseases of the Kidneys*. In his management of these Dr. Loomis follows closely that suggested by Dr. Grainger Stewart, which is probably one of the best. In the treatment of the acute form of Bright's disease, he recommends the use of digitalis, which he thinks increases the flow of urine, thus freeing the tubules of the epithelial debris with which they are plugged, without increasing the inflammation. In addition to these, there are several lectures on *Diseases of the Heart*, which we have not space to notice in detail. The author differs from writers generally in regarding mitral insufficiency as the valvular lesion least likely to interfere with health, or to cut life short. This certainly does not coincide with our experience.

Although the fact is familiar to every practitioner that aortic incompetence is more frequently the cause of sudden death than any other valvular lesion, he also knows that a high degree of aortic regurgitation is compatible with apparently perfect health, the patient being frequently unaware of its existence until his attention is called to it by his physician, and that individuals have lived several years after its presence has been recognized.

The author announces, in his preface, his intention at some future time to publish, in a similar form, lectures upon other important subjects connected with Practical Medicine.

J. H. H.

ART. XXXI.—*Syphilitic Lesions of the Osseous System in Infants and Young Children.* By R. W. TAYLOR, M.D., Surgeon to the New York Dispensary, Department of Venereal and Skin Diseases; Physician to Charity Hospital, New York. 8vo. pp. 179. New York: William Wood & Co., 1875.

THE volume under consideration is one which reflects credit alike upon the author and the science of medicine. The admirable manner in which the subject is handled gives evidence of the commendable spirit which actuated the writer throughout his studies, and entitles him to be recognized as a careful, thorough, and able investigator.

The subject is one to which very little attention has been devoted, and about which our knowledge heretofore has been only of the most fragmentary nature. The author of the work before us, however, has grasped the subject in all its bearings, and from a clinical study of some dozen cases encountered in his practice has evolved an elaborate and very valuable essay.

Dr. Taylor has divided his work into a number of chapters, each treating of some important question relative to the subject. The histories of twelve cases of syphilis affecting the osseous system in infants, serves as the foundation; these cases are all faithfully recorded, and portray the peculiar lesions in a very accurate manner. A *résumé* of the cases of various observers, including Wegner's, is given, from which is to be derived all the knowledge on the subject which we possess. As is known, Wegner's contribution, made a few years ago in *Virchow's Archiv*, consisting of the report of twelve cases of children who were either still-born or died shortly after birth, is to be regarded as the best account of the subject up to date; it will, however, be remembered that this writer considered the subject almost entirely from a pathological position.

A point of great interest which Dr. Taylor has elucidated relates to the separation of the epiphyses from the diaphyses, as found in clinical practice. This condition has been observed *post-mortem* in many of the reported cases, as in those of Wegner, Waldeyer, and others, but not before, we think, in clinical practice.

The enlargements upon the bones of the fingers and toes are very carefully considered, and afford an admirable exposition of these lesions. Dr. Taylor's earlier studies upon this topic will, in this connection, be called to mind. The recognition clinically of this form of bone disease is of vast importance, and worthy of attentive study on the part of both physicians and surgeons. In answer to the question whether similar osseous lesions can be developed from acquired as well as from hereditary syphilis, the author decides in the affirmative, this view being corroborated by the experience resulting from two cases of the twelve referred to, in both of which the disease was observed to be of

the same inflammatory nature, and showed the same tendency to involve the diaphyso-epiphyseal portions of bone as in hereditary syphilis.

In the chapter devoted to a consideration of the pathology of bone syphilis, the author follows Wegner in his division of the subject, but arrives at somewhat different conclusions. From microscopical study of sections, Dr. Taylor gives the following results, succinctly stated: that in the first stage there is a simple hyperplasia of cells, with irregular deposition of lime-salts; in the second, an intensification of this condition; and in the third, a new element, namely, the abnormal proliferation of all the elements of the tissues, with an infiltration of granulation-tissue into the medullary spaces following the vessels.

By far the best and most useful section of the work is that which considers the relation between rachitis and syphilis; it is exhaustively worked out. In speaking of the diagnosis, the author dwells upon the following points: In rickets we generally have a prodromal stage in which the general health of the child shows signs of impairment by well-marked symptoms; a condition not observed in syphilis. In syphilis the swellings usually show themselves very soon after birth; in rickets they usually come on after the sixth month. In syphilis there is commonly a history of other symptoms, such as snuffles, cutaneous and mucous lesions; in rickets these manifestations are wanting, the child being pallid, subject to sweats about the neck and head, restless at night, troubled with gastro-intestinal disorder, soon followed by general hyperæsthesia. Later, bone lesions occur, perhaps laryngismus stridulus, with convulsions. In rickets the bone disease is generally found upon the occiput and ribs; in syphilis it is apt to be upon the ends of the long and short bones, the ribs and skull bones ordinarily escaping. From these few lines it will be very evident that the author claims no relationship for these two processes, in which conclusion we are pleased to agree with him.

The work as a whole is original, and must establish Dr. Taylor's reputation even more prominently as an authority upon the subject of syphilis. Viewed as a production of the publisher, its appearance is elegant, the type and paper being of the most inviting description.

L. A. D.

ART. XXXII.—*Cyclopædia of the Practice of Medicine*. Edited by Dr. H. VON ZIEMSEN, Professor of Clinical Medicine in Munich, Bavaria. Vol. II. *Acute Infectious Diseases*. By Prof. THOMAS, of Leipsic; Dr. CURSCHMANN, of Berlin; Dr. ZUELZER, of Berlin; Prof. HERTZ, of Amsterdam; and Prof. VON ZIEMSEN, of Munich. Translated by JAMES C. WHITE, M.D.; and EDWARD WIGGLESWORTH, Jr., M.D., of Boston; EDWARD W. SCHAUFFLER, M.D., of Kansas City; and A. BRAYTON BALL, M.D., J. HAVEN EMERSON, M.D., GEORGE H. FOX, M.D., EDWARD FRANKEL, M.D., and JOHN C. JAY, M.D., of New York. ALBERT H. BUCK, M.D., New York, Editor of American Edition. 8vo. pp. xii., 751. New York: William Wood & Co., 1875.

THE second volume of this work, following so closely as it does upon the first, scarcely needs a very extended notice at our hands. Indeed, it would be impossible, within the limits at our command, to enter into a discussion of the merits of the various articles it contains. These describe the acute contagious fevers and the other affections which constitute the acute infectious diseases. The principal contributors are Professors Thomas, Hertz, and von Ziemssen, and Dr. Zuelzer. A brief chapter is devoted by the first of these gentlemen to the consideration of a disease which is popularly known in this country as German measles, but which he calls rotheln or rubeola. We fancy that the

latter name will convey to many of our readers no other signification than that which is attached to it by Dr. Wood in the edition of his work on *Practice* which we happen to possess. He regards it as synonymous with morbilli, in fact, seems to prefer it to the latter as the scientific name for measles. Prof. Thomas, on the other hand, uses it to designate a contagious disease which while it presents many points of resemblance to measles, can, in the majority of instances, be readily distinguished from it, and certainly confers upon the subject of it no immunity from measles. Like the latter disease, it is frequently accompanied by catarrhal inflammation of the mucous membrane, but not to so marked a degree. The spots are not so large as those of measles; their form is more nearly round, they are not so angular and indented, and owing to the very slight swelling which accompanies them, they seem paler and more as if they had been sprinkled over the surface. Moreover, rubeola may and frequently does run its course without fever. In fact, were it not that Prof. Thomas confers upon it contagious properties, it would be difficult to see in what way the German measles differs from roseola, or what is called French measles, and there can be but little doubt that many of the cases in former times attributed to the latter disease would at the present day be ascribed to the former.

In the other articles on the contagious fevers we find little to draw special attention to. In the treatment of scarlatina, Prof. Thomas recommends, as indeed he does when speaking of measles, that, whenever the temperature in the axillæ approaches or exceeds 102° Fahr., cold packings should be employed, and that these should be replaced by the cold bath if the temperature is over 103°. With higher temperatures, especially in young children, these means should be united.

Prof. Hertz, who writes the chapter on Malarial Diseases, recommends the administration of rather larger doses of quinia in intermittent fever than have been found necessary in this country. Nor does he think it a good plan to divide the dose into small quantities, to be given at short intervals. He recommends that as much as twenty-two grains should be given during the intermission. Half of this may be taken immediately after a paroxysm, and the rest a few hours later, so that it all be taken five or six hours before the succeeding paroxysm. He also ascribes prophylactic properties to the drug, and recommends its use by those exposed to malarious exhalations, in doses of from four to five grains every morning and evening.

The articles in this volume are almost exhaustive treatises on the subjects which they discuss, and will be sources of information not only to students but to many practitioners. Like those in the first volume, they have been admirably rendered into English. A valuable feature of this work, and one which we neglected to notice before, is the copious bibliography prefixed to each article.

J. H. H.

ART. XXXIII.—*On Functional Derangements of the Liver. Being the Croonian Lectures delivered at the Royal College of Physicians, in March, 1874.* By CHARLES MURCHISON, M.D., F.R.S., F.R.C.P., Phys., and Lecturer on the Principles and Practice of Medicine, St. Thomas's Hospital, etc. 12mo. pp. xvi., 182. New York: William Wood & Co., 1875.

THE author claims that these lectures "are a feeble attempt to sketch with the light of recent investigation those symptoms and morbid conditions which

may fairly be put down to a disordered liver," and hopes "that they will help to supply what appears to be a deficiency in medical literature." The lectures faithfully cover the scope above set forth, and we earnestly hope that Dr. Murchison himself will use them as a stepping-stone to an elaborate study of the subject, and in a future edition give to our literature a clinical study of the subject, such as the well-known ability of the author of the classic work on the "Continued Fevers of Great Britain" would lead us to expect.

The opening lecture very appropriately contains a sketch of our knowledge of the physiology of the liver, which is followed by the author's classification of its functional derangements, based upon the normal functions of the gland, and upon the symptoms which a disordered liver may excite in the different physiological systems of the body.

The lecture on Abnormal Disintegration is of more than usual interest, and will well repay perusal. In it the author points out that the imperfect disintegration of albuminous matter, or its non-conversion into a soluble product (urea), which can be readily excreted by the kidneys, is the chief functional derangement of the liver; and, in corroboration of this statement, he adduces diseases in which there is destruction of the secreting tissue of the liver, with the result of a substitution in the urine, for urea, of leucin and tyrosin, products of disintegration more complex and less oxidized than uric acid and urea. The same is true in certain acute febrile diseases, such as typhus and typhoid fever, in which the liver tissue sometimes appears, in consequence of the increased work thrown upon it, to undergo partial disintegration. But these changes in the urine are only known to occur in cases where there is change of the liver structure.

The author then discusses other and more common changes in the urine, indicative of imperfect disintegration or oxidation of albuminous matter, the result of functional derangement of the liver, but which are not necessarily associated with structural disease of that organ, the most common of which is the deposit from the urine on cooling of uric acid and urates (or, as he prefers to call them, lithic acid and lithates). Dr. Murchison lays stress upon the fact that these deposits are not due to any morbid condition of the kidneys, but that they always ought to be regarded as a sign of functional derangement of the liver arising from causes, sometimes temporary, at other times more or less permanent. The morbid state of the blood resulting from this abnormal disintegration Dr. Murchison designates lithæmia, preferring this term to uricæmia, which was proposed by Dr. Austin Flint. Among the results of lithæmia are enumerated gout, urinary calculi, biliary calculi, degeneration of the kidneys, structural disease of the liver, degeneration of the tissues throughout the body, local inflammations, constitutional diseases, derangements of the organs of digestion, of the nervous system, of the circulation, of respiration, of the urinary organs, and of the skin.

Dr. Murchison concludes the volume with a sketch of the causes of functional hepatic derangements and their treatment. The treatment of habitual lithæmia is pithily expressed by Dr. Bence Jones as "a minimum of albuminous food, in order to produce the least uric acid; and a minimum of carbonaceous food, in order to allow the uric acid to be oxidized as much as possible."

Contrary to his preconceived opinions, Dr. Murchison finds that the clinical proofs of the efficacy of mercury as a cholagogue are overwhelming.¹

The thanks of the profession are due to Dr. Murchison for this interesting

¹ For the statement of his views on this subject, see Monthly Abstract of Medical Science, Aug. 1874, p. 55.

little volume. That its timely publication will call attention to an obscure, and we might say a much neglected subject, we do not doubt, and we indulge in the hope that its instructive pages will prove a stimulus to the obtaining of a more definite knowledge of the functional derangements of the liver.

I. M. H.

ART. XXXIV.—*On the Treatment of Fistula and other Sinuses by means of the Elastic Ligature.* Being a paper (with additional cases) read before the Medical Society of London, November, 1874. By WILLIAM ALLINGHAM, Fellow of the Royal College of Surgeons of England, Surgeon to St. Mark's Hospital for Fistula, etc. 8vo. pp. 47. London: J. & A. Churchill, 1875.

IN this slender volume Mr. Allingham, who is already favourably known to American surgeons through his excellent practical work on *Diseases of the Rectum*, narrates a number of cases of fistula in ano, which he has successfully treated by the method popularized by Prof. Dittel, of Vienna, and gives his reasons for advocating this mode of treatment as in ordinary cases preferable to the use of the knife. The advantages claimed by Mr. Allingham for the new method are that: (1) the operation is commonly painless, and the subsequent suffering, if any, very slight; (2) there is greater rapidity of cure; (3) the patient need not keep his bed, nor even his room, but may go into the air, driving or walking in moderation; (4) it is peculiarly applicable to delicate patients, and those who have a phthisical tendency; (5) it is bloodless; (6) there is a minimum amount of suppuration; (7) the ligature is often very advantageous as a supplement to the knife; and (8) there is usually no anæsthetic required.

In estimating the force of Mr. Allingham's arguments, it is but fair to remember that the cutting operation which he is in the habit of practising in cases of fistula, is much more severe than that habitually resorted to by other surgeons, involving not only the laying open of any sinus which may run up higher than the internal opening of the fistula, but also that famous "back cut" of Mr. Salmon, which most surgeons of the present day look upon as quite an unnecessary proceeding. For our own part, believing, as we do, that it is quite sufficient, in cases of fistula in ano, to divide the sphincter by an incision connecting the external and internal orifices of the fistula, we have not found the operation one of so grave a character as to make us eager to substitute Prof. Dittel's method, particularly as we know of at least one case in which, after the failure of the elastic ligature, it was necessary to repeat the operation with the knife. It is but right to add that Mr. Allingham does not claim that the ligature can ever entirely supplant the knife in the treatment of anal fistula, and we are quite prepared to agree with him "that the india-rubber is valuable in many cases as a substitute, and in others as an auxiliary, to the usually employed method of incision."

Mr. Allingham has devised a simple and ingenious instrument, consisting of a notched probe passing through a canula, to facilitate the introduction of the ligature, and has substituted for the knot, the tying of which is very apt to break the india-rubber, a "small, soft-metal, oval ring," through which the ends of the ligature are threaded and drawn tight, and which is then securely clamped with a strong pair of forceps.

J. A., JR.

ART. XXXV.—*The Physiology of the Circulation in Plants, in the lower Animals, and in Man. Being a course of Lectures delivered at the Surgeon's Hall to the President, Fellows, etc., of the Royal College of Surgeons of Edinburgh, in the summer of 1872.* By J. BELL PETTIGREW, M.D., F.R.S., F.R.S.E., F.R.C.P.E., Fellow of the Botanical, Medico-Chirurgical, and other Societies; Lecturer on Physiology at Surgeon's Hall, Edinburgh; Examiner in Physiology to the Royal College of Physicians, Edinburgh; Pathologist to the Royal Infirmary of Edinburgh, etc. etc. etc. 8vo. pp. 329. Illustrated by one hundred and fifty engravings on wood. London: Macmillan & Co., 1874.

IN this work we find many things to admire; at the same time, a certain number which do not strike us as pleasing. The author commences with an epitome of the history of the circulation, which, with the definition of the circulation, forms his introduction.

Circulation in plants is first considered. This portion of the subject has been admirably treated; in fact the topic has been presented in a most masterly manner. The phenomena of *endosmose* and *exosmose* are elaborately discussed, with the movement of sap, respiration of plants, the vessels of the vegetable kingdom, etc. etc. Points of resemblance between the vessels of plants and animals are fully described. Organic force a modification of the inorganic, together with motion a condition of matter, closes this division of the work under consideration. A brief account of the circulation in metals, *i.e.* the thermo-electric current, is added. Circulation in animals—invertebrata—forms a very interesting chapter; the author being evidently possessed of a most profound knowledge of comparative physiology, which shows itself in his discussion of the circulation in animals—vertebrata—the fish, aquatic reptiles generally, the frog, crocodile, etc. One of the features of the book is the consideration of the *fœtal circulation*. An exhaustive account is given of the relations between *placenta and uterus*, which is most interesting. We would also call attention to the careful manner in which the course of the fibres of the mammalian heart are described, illustrated by a number of drawings from actual dissections by Dr. Pettigrew. The anatomy of the bloodvessels does not, however, seem satisfactory; there is an indefinite description which leaves much to be desired. The same may be said of the structure of the valves of the heart, arteries, and veins. There seems to be no very well-determined cause for the second sound of the heart, as our author, although giving the views of many eminent physiologists, does so in a manner scarcely to the point. An elaborate description of the ganglia and nerves of the heart, and their connection with the cerebro-spinal and sympathetic systems in mammalia, concludes the book. Here we find drawings, from nature, of many original dissections, which are evidences of a large amount of careful labour. The rhythmical action of the heart receives its full share of consideration.

No mention is made of the rapidity of the blood current, its force, or of the application of the graphic method as a means of investigation. Many points of interest belonging to modern physiology are thus left unnoticed. We can hardly say that the author's style is pleasing, although the book is a simple series of lectures. As far as the illustrations are concerned, they are simply tolerable. We cannot admire the word "original," under those drawings which were made especially for the work. Taking the book as a scientific representation of the subject, it may be considered a success; but it surely cannot be said to possess that attractiveness or clearness of description which we would wish for.

J. W. S. A.

ART. XXXVI.—*Histology and Histochemistry of Man. A Treatise on the Elements of Composition and Structure of the Human Body.* By HEINRICH FREY, Professor of Medicine in Zurich. Translated from the fourth German edition by ARTHUR E. J. BARKER, Surgeon to the City of Dublin Hospital, etc. 8vo. pp. 683. New York: D. Appleton & Co., 1875.

THE American work on histology still remains to be written; but until it does make its appearance, we can well afford to rest contented with the many second-hand productions in the shape of translations of eminent European authorities. If the rapid appearance, in a very brief space of time, of translations of Stricker's Handbook of Histology, Frey on The Microscope, and lastly of Frey's Histology and Histochemistry, may be accepted as a criterion of the increased interest arising on this subject among the medical profession of our country; then, assuredly, it will not be long ere the active demand will be supplied by native skill. A new era in histological research is evidently dawning amongst us. The early love for diatoms is giving place to the more ambitious struggles in the domain of histology proper. Earnest workers are in the field, and the contumelious taunt that American microscopists are mere dilettanti is no longer applicable.

Bona fide students of histology will welcome with sincere pleasure this translation of Frey's excellent text-book. Being the first work on this subject placed in our own hands, our continued penchant for it has caused it to be one of the most thoroughly worn and dog-eared books upon our table. A standard authority in Germany, the home of histology, it has rapidly reached the fourth edition, and, in comparing it with the second, we are forcibly reminded of the great strides that have recently been made in histology. The work has measurably grown in bulk, and seventy-eight new illustrations have been added—they now number over six hundred. Although Frey furnishes very few original illustrations, borrowing extensively from numerous sources, especially Kölliker and Stricker, yet they form one of the most attractive and instructive features of the work. Accurate drawings have a lasting value, no matter what be the ultimate fate of the theories founded upon their appearances.

A work of this size and character must necessarily, in a great measure, be a compilation; but in this instance the compilation is made by one of the most distinguished microscopists in Europe; and we find in each chapter not only a complete *resumé* of what has been written on the subject of which it treats, but also usually an unbiassed judgment by the author himself as to what may be received as established, and what must be regarded as purely conjectural.

The author has conveniently divided his treatise into three parts. The first treating of the elements of composition and structure of which the human and animal body generally is composed. In the second division the various tissues, in their anatomical relations and composition, are comprehensively considered. Thus, by gradual stages, the student is brought to the consideration of the complex structure of the organs and systems of the body, under the title of topographical histology. Admirably as this arrangement is adapted to the wants of the student, it necessarily entails a certain amount of repetition. One word as to the histochemical part of the work—it is simply unrivalled, and, like the histological part, it has been brought up to the most recent observations. The physiologist and pathologist alike will find it of indispensable utility.

While we most cordially recommend this book to the student, it is not in the spirit of invidious criticism that we apprise him of the fact that it presupposes a certain familiarity on his part with the methods of microscopic manipu-

tions. No elaborate instructions are given of how to treat fresh tissues with gold, silver, and other now indispensable methods of studying the tissues. This is only apparently an omission, for such a knowledge is not to be gained by mere reading, but by actual work in the laboratory.

Dr. Barker has succeeded in accomplishing the difficult task of translation in a very creditable manner, presenting us with good, readable English; a feat that is by no means always achieved.

R. M. B.

ART. XXXVII.—*Compendium of Children's Diseases: A Hand-book for Practitioners and Students.* By Dr. JOHANN STEINER, Professor of the Diseases of Children in the University of Prague, etc. Translated from the second German edition by LAWSON TAIT, F.R.C.S., Surgeon to the Birmingham Hospital for Women, etc. 8vo. pp. xvi., 408. New York: D. Appleton & Co., 1875.

DR. STEINER has been collecting materials for this work during the whole period of his connection with the Francis Joseph Hospital for Children in Prague, extending over more than fifteen years. The field for observation is a large one, and the book affords abundant evidence that the author has known how to use his opportunities. The translator, Mr. Lawson Tait, hardly needs an introduction to an American audience, being well known in this country through his contributions to medical literature. The book is, as its title says, a compendium; and, therefore, while it contains a good deal of information—even surgical affections and congenital deformities being included—cannot be regarded as a complete treatise. It will be valuable to the American student, chiefly, we think, because it affords him a better idea of German therapeutics in children's diseases than he can obtain elsewhere, but will scarcely take the place of some of the books already in his possession, which contain a fuller description than Dr. Steiner gives of the summer complaints to which so many children succumb in this country. Mr. Lawson Tait has added, as an appendix, the "Rules for Management of Infants," issued by the Birmingham Sick Children's Hospital, which are, in the main, similar to those recommended by the Obstetrical Society of Philadelphia. J. H. H.

ART. XXXVIII.—*Sex in Industry; a Plea for the Working Girl.* By AZEL AMES, Jr., M.D. 24mo. pp. 158. Boston: J. R. Osgood & Co., 1875.

THE writer of this little volume seeks to do for girls working for a living, what Dr. E. H. Clarke has done for girls studying—that is, to procure proper recognition and consideration of sexual peculiarities. At present, he argues, the position of the female worker is even worse than that of her studious sister. With the latter, only the methods and manner of exertion need to be changed. With the former, not method only, but the character of labour is often radically wrong. The girl-student may safely learn all that her brother does, if only she study under proper observance of the rules of female health. But the girl-worker is often put to tasks for which she is wholly unfit, under any regulation, and which should be assigned only to males or adult women.

Ten per cent. or more of working women in the United States are under fifteen years of age. It is hardly needful to add that very many of those who have passed this age have not yet fully established their menstrual function. The methods of nearly all female labour, outside of the household, are but too well adapted to disorder this function; while some forms are necessarily and radically inconsistent with healthful development in very young women.

The vast amount of illness among female operatives, due to unsuitable work and improper methods, causes an immense aggregate economic loss to the State. There is the direct loss of productive industry, and the consequent loss from cost of cure or support, besides the diminution in the number of children to become producers in their turn. Unfortunately, too, the sickness of this class and from these causes is peculiarly apt to be prolonged into chronic invalidism.

A distinct and great evil arising from female industry as now existing, comes through the moral influences which the conditions and associations exert upon the young and unformed natures of the girls. The loss of modesty, the premature awakening of passions, and many other deplorable results of shop and factory life, do certainly in the long run impair the productive capacity as well as ruin the moral character of many.

It is a very curious fact, and seems, to our now awakened attention, almost incredible, that in all the many inquiries and investigations set on foot at home and abroad into the sanitary influences, conditions, and needs of the working classes, the effect of employment upon sexual health has been almost completely ignored and unthought of. It was left for Massachusetts, in 1874, to recognize the reality and the import of such connection.

A compact tabular exhibit is presented of the results, first to the worker, secondly to the State, of any form of labour which seriously interferes with normal feminine development. The suggestions of personal misery are terrible, and those of State loss startling, when we are shown that thousands of young girls are engaged in such work in all our manufacturing centres, and in all great cities. The directions in which wrong is done are, in putting girls at work too early in life, working them too many hours, setting them tasks fit only for fully developed women, and allowing no relaxation when "unwell." Even in women nearly or quite mature, serious functional disturbance, and its dread train of evil consequences, are found very often to result from the severity of their labours, and the intense concentration of mind and rapidity of manipulation frequently required, in conjunction with poor food and unwholesome habits and surroundings. If not directly caused, as above, functional trouble may be consequent upon other disease thus produced.

The writer goes on to show how, everywhere, children are set at work too early, even in defiance of statutes, which have not been enforced. Laws fixing a minimum age, requiring certain school attendance, and otherwise regulating juvenile industry, have been unskillfully drawn, and are evaded by connivance of parents and employers.

The effect of their work upon the health and future of their employés is wholly disregarded by employers. Mills, shops, and stores are run without the slightest care for such trifles. The cruel rules which keep shop-girls standing are denounced. A quotation from Dr. Van de Warker gives a forcible exhibition of the anatomical peculiarities which indicate long standing to be much less possible for women than for men.

The employment of young women is shown to be generally excessive in duration, and often extremely exhaustive from the constant and close attention which it requires, and from bad hygienic conditions.

The writer now passes to an examination, in detail, of the more prominent forms of female industry which he believes to be ill-suited to any but strong and fully developed women. The baneful results following the employment of very young or delicate women, in these employments, are forcibly presented, with abundance of cogent testimony. The kinds of work here shown to require strength and maturity in the female worker, are many kinds of mill-work, type-setting, telegraphy, basket-making, the counting of money and other things, and operating the sewing-machine. There are many curious and pertinent illustrations of the direct and marked injury resulting to the functions of young women thus engaged. The union of rapid or delicate manipulation, with a constant and concentrated attention, as required especially in setting type and in attending to the business of a telegraph office, proves fairly ruinous to the sexual health of young girls.

Whether or not it will be found practicable so to modify the methods of the above-mentioned employments, and so to secure shorter hours of labour and more frequent vacations, that young women may safely engage in them, is a question of vast importance. Some general suggestions only are advanced by the writer as to possible improvements. The diffusion of correct views concerning the effects of occupation upon female health and functions, and enlightened laws rigidly enforced, are the directions in which Dr. Ames is disposed to look for practical relief. Only when legislators and the public attain to something like a correct appreciation of both the moral and the economic need of considering sex in connection with industry, will it become possible to obtain efficient legislation. Some suggestions as to points to be covered by future laws, with brief reflections on the true position of the working woman, close the volume.

The whole general tone of this book, and even little peculiarities of arrangement and method, as well as its title, show a pretty close copying of Dr. Clarke's style and spirit. As, however, the writer is perfectly frank in his acknowledgment of indebtedness to that gentleman in the execution of his work if not in its origin, such similarity to an excellent model is worthy, perhaps, rather of praise than blame. In point of clearness of statement, however, and correctness of expression, the comparison suggested does not redound to our author's credit. The views presented are, however, so sound and so well established by testimony, and the general tendency of the work so good, that mere literary criticism would be ungracious. We heartily wish that it may be very widely read by all classes of readers.

B. L. R.

ART. XXXIX.—*Spinal Paralysis of the Adult ; Acute, Subacute, and Chronic.* By E. C. SEGUIN, M.D.

Infantile Spinal Paralysis. By E. C. SEGUIN, M.D. 8vo. pp. 47. New York : D. Appleton & Company, 1874.

THE first of these papers was read before the New York Academy of Medicine Nov. 5, 1874, and the second is a Clinical Lecture which was delivered at the College of Physicians and Surgeons, New York, in 1873. The two are now printed together in pamphlet form, and present an unusually neat appearance as regards both the binding and typography.

The affection to which Dr. Seguin first calls our attention, namely, "spinal paralysis of the adult," is striking from the close relationship which it bears to the "essential paralysis of infancy." Its existence has been known for some

time, Duchenne claiming to have recognized it in 1847, and all physicians who see many cases of diseases of the nervous system must occasionally see cases of paralysis of spinal origin in adults, which remind them greatly of infantile paralysis.

Dr. Seguin has collected twenty-one cases of the three varieties of "spinal paralysis of adults," of which six came under his own observation.

The disease, as above indicated, is divided into three forms, acute, subacute, and chronic. The symptoms of the first variety closely accord with those of infantile paralysis, indeed, any one reading the description of the author would feel satisfied of the identity of the affections. When we come to consider the subacute form, however, we must admit that the diagnosis is not so clear. The symptoms, as described in the essay before us, seem much more like those of spinal congestion, and we do not consider the differential points, as given by the author, sufficient to discriminate between the diseases. Indeed, it is curious to observe that in Case X. and Case XVII., which happen to be the same patient (Dr. Seguin not having been aware of the fact until after the article was printed), Dr. Hammond, who reported the case first, described it as one of progressive muscular atrophy, while Dr. Seguin, when he saw the patient some years later, regarded it as one of spinal congestion, although he now considers it a case of "subacute spinal paralysis."

The symptoms which the author teaches are to distinguish this affection from spinal congestion, are "loss of electro-muscular contractility to faradism," and muscular atrophy, in the former. Now in spinal congestion the most paralyzed muscles respond but feebly to the faradic current, and they do become atrophied. We have ourselves seen recently a case of spinal congestion, in which the muscles of the forearm were so much atrophied as to make the case resemble one of lead palsy, but in this patient the loss of power, although general, was nowhere complete, and there were numbness, formication, etc. This patient rapidly improved under the use of ergot and electricity.

The ages of the twenty-one cases of "spinal paralysis" were from eighteen to sixty-two years; Dr. Seguin mentions that the oldest child recorded in his table of infantile paralysis was seven years: "thus leaving a gap of eleven years of life, in which an immunity to spinal paralysis seems to exist." We have within a few days seen a case of infantile paralysis which appeared at nine years, and probably when a sufficient number of cases have been put on record it will be found that the affection may occur at any age. The writer also lays stress on the fact that sixteen of the twenty-one patients were males, but, we think, the whole number of cases is too small for this to have much weight.

The thanks of the profession are due Dr. Seguin for bringing this important subject before their notice, and he has certainly dealt with his theme in an able and interesting manner.

The lecture on "Infantile Spinal Paralysis" is mainly a *résumé* of the latest views on the subject. There is also a table of twenty-five autopsies of cases of this disease, which has already proved useful to more than one writer.

We are gratified to find one of so great experience saying that "the *prognosis* of infantile paralysis is not good for many reasons. . . . Many of the deformities can be remedied, at any age, by proper orthopædic treatment; but that is not curing the disease." This opinion agrees with our own, and before reading Dr. Seguin's paper we had expressed ourselves in very much the same manner in the following notice of Dr. Knight's work on "Orthopædia."
W. S.

ART. XL.—*Orthopædia, or a Practical Treatise on the Aberrations of the Human Form.* By JAMES KNIGHT, M.D., Physician and Surgeon in charge of the Hospital of New York Society for the Relief of the Ruptured and Crippled, etc. 8vo. pp. 353. New York: G. P. Putnam's Sons, 1874.

OF late years the literature of orthopædic surgery has increased greatly, and, judging from the work before us, the subject itself must have attained vast proportions, for here we find discussed, in addition to deformities of the feet and spine, hernia, procidentia uteri, onychia maligna, varicose veins, and even chorea, sciatica, amenorrhœa, and aneurism.

Of course it is hard to say what disorder may not be called a deformity or "aberration of the human form," indeed almost all surgical affections could come under this head, if the point were strained, *e.g.* a fracture or a mashed finger may be looked upon as a deformity; but how sciatica or amenorrhœa can be included in orthopædics we are at a loss to imagine. It may be that the author merely wishes to give us, in passing, a little gratuitous information, but if so why does he not go further and tell us how to treat pneumonia or any other disease?

Dr. Knight has had ample opportunities for making himself familiar with his subjects, for in the introductory chapter he speaks of having had "the supervision of 26,448 patients, within the past ten years, at the hospital for the relief of the ruptured and crippled." Any one on reading these figures would be likely to be greatly impressed with the immense number of orthopædic cases which have come under the author's observation. An examination, however, of the report of the above-named hospital, for 1873, shows that the reader is likely to be misled by the above figures; for in 1873 there were 4634 patients treated. Of these, 1787 were ruptured, 289 were cases of disease peculiar to women, 622 varicose veins, and 665 "*other ailments.*"

Dr. Knight begins his treatise with the consideration of some of the varieties of congenital malformation. In spite of the unpromising character of some of the cases the results seem to have been very satisfactory. He next takes up club-foot and its treatment. The author is a strong advocate of tenotomy, and careful rules are given for the performance of the operation. A modification of Scarpa's shoe is the form of apparatus advised in the different varieties of talipes. The steel springs are retained in use by Dr. K., as he considers the India-rubber cords unreliable and cumbersome. This portion of the work is instructive and of interest.

Infantile paralysis is considered at some length, but nothing new is suggested in its treatment, except perhaps the application of strychnia ointment to the paralyzed limbs. The author's prognosis in this affection is more favourable than that of most other writers on the subject. On page 92 we find stated that "the practical attainment of knowledge in this department of science, determines a favourable prognosis in nearly all cases of infantile paralysis, the ailment having now been brought within the rational influence of pathological and therapeutical science, and requires only assiduity from the skilled practitioner, together with invariable obedience from patients and attendants, to insure relief in nearly every case of infantile paralysis."

Everything depends upon what "relief" means. If it implies redressing deformities and enabling the patient to accomplish locomotion by means of apparatus, crutches, etc., we agree with the writer; but if it means entire restoration of power in the palsied limbs, in anything like the majority of cases, we must dissent from the opinion. Complete recovery takes place, in many

instances, under appropriate treatment patiently applied, but these are cases which are seen early and before extreme degeneration in the muscles has taken place.

Chapter V., which comprises forty-eight pages, is devoted to the consideration of electricity as a therapeutic agent, and of this space twelve pages are allowed the Galvano-Faradic Manufacturing Co. of New York to describe their various apparatus. For this favour they receive the "grateful consideration of the author."

There is nothing new in the treatment of spinal curvature, the ordinary crutch support, resting upon the hips, being the apparatus used. Tenotomy is spoken of in connection with the treatment of lateral curvature, but the writer does not appear to have resorted to it himself in any case.

Coxalgia is treated by moderate exercise in the open air, and a simple form of instrument is applied. Extension while the patient is kept in bed is spoken of only to condemn it. Excision of the head of the femur is considered "unjustifiable even in extreme cases." The absence of any reference to Prof. Sayre as an authority in this affection is noticeable. Dr. S.'s apparatus for hip-joint disease and his experience in excision of the head of the thigh-bone, which we understand he has performed fifty-six times, are well known.

The work is concluded with a chapter on the effects of tonics upon the system.

We regret to come to the consideration of the literary merit of the work, for on almost every page are found sentences, the construction of which would cause bitter anguish to the lamented Lindley Murray. In two instances Geoffrey Saint Hilaire's name is incorrectly spelled, and is written with a comma between the two names, as if they belonged to different individuals. On page 20 we are told that "Case No. 6 is of a female child, *primipara*, delivered by a midwife," etc. We presume that it is not intended for us to believe that the child was the *primipara*, but from the construction it would appear so. If such was the case, she was truly precocious, for she was but six months of age.

On page 136 is given the following prescription:—

"R.—Soda bicarb. ʒj;
Pulv. ipecac.,
Pulv. opii, āā gr. j.—M.
Ft. cht. No. x.

One to be taken every fourth hour."

This is said to afford relief in sciatica, as it "relieves the kidneys," which are "most commonly in an abnormal condition in seizures of sciatica."

The book is profusely illustrated with indifferent wood-cuts, and some are made to do duty more than once. Pictures of a child swinging in a doorway and of a boy riding a "locomotive cantering horse," are thought necessary, and on page 199 there is a remarkable drawing of the trousered legs of a child, braces being supposed to be under the clothing.

W. S.

ART. XLI.—*On the Psoriasis or Lepra.* By GEORGE GASKOIN, Surgeon to the British Hospital for Diseases of the Skin, formerly House Surgeon of St. George's Hospital, Fellow of the Royal Medical and Chirurgical Society of London, etc. etc. 8vo. pp. xv., 206. London: J. & A. Churchill, 1875.

THE work before us is the most extended monograph which has ever appeared upon this subject. Its scope is exhaustive, embracing a description

of the symptoms and course of the disease, together with chapters devoted to etiology, diagnosis, pathology, and treatment. At the same time a glance through its pages suffices to show that much that is known concerning the affection has been omitted, the reason doubtless being that it has been the author's aim to present only his own views and experiences. No mention whatever is made of the labours of prominent workers in this same field of study, nor of existing monographs of distinction, which certainly call for at least a passing word of acknowledgment. The book is to be regarded then simply as an exposition of the author's individual experience.

In speaking of the time of life at which psoriasis may appear, we find the following very remarkable views, which, it need scarcely be mentioned, are altogether at variance with those held by the profession. The quotation will also give a fair idea of the style of the author.

"Little or nothing is said by authors as to the occurrence of psoriasis in the first period of infancy, and when it appears in our day it is at once set down to syphilis; those who allow that it exists as a distinct affection, have written of it as mixed with impetigo and eczema. I allow that this is sometimes the case, but I am well assured, however—it may be rare—that psoriasis may exist uncomplicated in the infant and distinct. I have indeed observed it several times, and always in the constitution of the parents or in the history there was something that strengthened the opinion I had acquired from the external manifestation. True, that in a mother with psoriasis the infant is more likely to have eczema, a disease far more common in infant life, but sometimes the other will appear. I would, therefore, have more hesitation shown in deciding on syphilis in the infant on such narrow ground as the presence of a dry eruption. The appearance of idiopathic psoriasis, as I have seen it in infants, is not very different, so far as the skin is concerned, from what is seen in inherited syphilis, that is to say, the skin is glazed, shining, somewhat silvery. It may be found accompanied with intense irritation, and at least in slight degree somewhat liable to be accompanied with eczema."

The line of distinction, as drawn by the author, between these three diseases is by no means clear. It is a matter of regret that he has not somewhere stated his position in regard to the definition of eczema. The paragraph just quoted goes to show, what is manifest upon many pages, that psoriasis and eczema are confounded. That which the author chooses to call psoriasis infantilis would be by other dermatologists designated as a form of eczema. According to the opinion now universally held, psoriasis never exists in the infant; it, indeed, rarely shows itself before the eighth or tenth year.

In turning to the etiology, we find the opinion pre-eminently advanced that the disease has a close relationship with hereditary asthma, and that these two affections are very frequently encountered in the same subject, in support of which a large number of cases are briefly reported. Here again, however, we are at a loss to know whether the line between psoriasis and eczema is firmly drawn, for in the notes of some of the cases, eczema is stated as being present with the psoriasis.

In the chapter relating to "affinities and diagnosis," we meet with much that we are inclined to question. The views entertained are widely different from those recognized by dermatologists of the present day. Among other peculiar opinions the author holds that there is a relationship between psoriasis and elephantiasis (Græcorum), and also between psoriasis and alopecia. (!)

The section upon treatment is the most interesting portion of the book, as it gives Mr. Gaskoin's experience in a large number of cases extending over a period of many years. Internal remedies are relied upon for the cure, and among these arsenic occupies the first position. The author is no friend of external treatment, denouncing the various so-called methods as "better

adapted to a regiment of soldiers, or to a convict establishment, than what is generally met with in civil society."

A large number of cases are to be found throughout the work, introduced mainly for the purpose of substantiating certain opinions; they are not well reported. At the close an extended pharmacopœia is appended, consisting of various preparations, ointments, lotions, etc., but unfortunately with no special indications for their employment. The volume cannot be considered as a practical treatise; it will be found of greater interest to the dermatologist than to the general physician.

L. A. D.

ART. XLII.—*Tumour of Lateral Portions of the Lower Jaw removed without External Wound.* By C. F. MAUNDER, Surgeon to the London Hospital, etc. Small 8vo. pp. 27. London: J. & A. Churchill, 1874.

As our readers well know, large portions of the lower jaw have been removed without external incision in cases of *necrosis*, and even, in some instances, the entire jaw; but Mr. Maunder is, so far as we know, the first surgeon who has proved the practicability of similarly removing through the mouth large segments of the jaw in cases of tumour of that bone. In the small work now before us, two cases in which this has been accomplished, are described, the first occurring in a child, being a case of myeloid tumour, in which "a very large piece [nearly half] of the lower jaw, containing a growth of the size of a hen's egg, was removed through the mouth, without any section whatever of skin; with trifling bleeding, and without division either of the facial artery or of branches of the facial nerve," and the second, in an adult, a case of fibrous epulis, in which, though the proportion of bone removed was smaller, the operation was more difficult on account of the greater thickness and hardness of the jaw.

"With regard," says the author, "to the dimensions of a tumour of the lower jaw, which may be removed without division either of the cheek or lip, my impression is that such as do not prevent depression of the chin so that the mouth can be opened, or do not fill the cavity of the mouth so as to prevent the finger and instruments from reaching the ramus, may be so treated. Indeed, I should expect that in this latter event, section of the base of the bone having been effected at the required spot, the tumour and diseased portion of bone might then be so much depressed as to allow the operator to get at the ramus and divide it with a saw. Again, a tumour growing in a certain direction forwards, outwards, and downwards, . . . rather aids the operator by enlarging the buccal orifice as it drags upon the lower lip."

Mr. Maunder's pages are adorned with wood-cuts showing the appearance of the patients after operation, and the amounts of bone removed. J. A., JR.

ART. XLIII.—*Annual Report of the Supervising Surgeon of the Marine Hospital Service of the United States, for the Fiscal Year 1874.* By JOHN M. WOODWORTH, M.D. 8vo. pp. 256. Washington, 1874.

FROM this report we learn that in 1870, Congress passed a law thoroughly reorganizing the methods by which, since 1798, the Nation has attempted to care for sick or wounded merchant sailors. Apparently, the changes came not too soon, as the succour extended was unduly expensive, and unjustly distri-

buted. The whole matter seems to have been sadly in need of organization and of superintendence. Judging from the statements presented of comparative cost, and amount and character of relief afforded, just before the recent legislation, and during 1874, the results show great improvement. The Nation is put to less charge, the sick sailor has better care and greater chance of recovery, while malingers and vagabonds get their deserts. Suggestions as to further legislation seem to us eminently wise. They indicate both the great need in which the service was, of radical changes, and also the breadth of view and practical sagacity brought to his duties, by Supervising Surgeon Woodworth.

Much pains have recently been taken to place the service in its true light, especially in the esteem of sailors. It is not to be regarded as an eleemosynary agency, to be shunned and dreaded as destructive of self-respect. It is really the administration of a trust-fund, created principally by the contributions of the class which it is to benefit, and only supplemented by a government whose best interests are promoted by its work. The more completely self-supporting it can be made, however, the more useful will it be.

Fully alive to the present and future prominence given to measures for the prevention of disease, Dr. Woodworth finds in the life and surroundings of poor Jack a wide and untilled field for this highest function of medicine.

Among the essays and papers here presented, in an Appendix occupying three-fifths of his pages, are several articles looking especially to the preservation of health.

The tables of mortality here given employ the "provisional nomenclature of diseases" of the Royal College of Physicians [London]. They exhibit the deaths for each of the nine districts, and for different months. Other tables exhibit the extent and work of the service.

Coloured charts give graphic representations of the comparative prevalence of mortality from a few important diseases, during different months, or in different districts.

In a few remarks commenting upon the tables, and introductory to the essays presented, Dr. Woodworth adverts to the continued occurrence of scurvy and the terrible fatality from lung diseases, as showing that the care exercised over the sanitary surroundings of the sailor is by no means what it should be.

The papers from various writers, here printed, were prepared in response to circulars sent out by Dr. Woodworth, suggesting to the medical officers the preparation of essays, not upon matters of merely general medical interest, but upon subjects having especial bearing or connection, in some aspect, with a sea-faring life. In some cases a topic was suggested, to some officer believed to have peculiar advantages for its study.

Dr. Heber Smith treats of the *Hygiene of the Forecastle*. Well is this quarter designated as the neglected spot of the ship. Filth and dampness are its frequent, and want of air its universal, characteristic. As a source of disease, and as a carrier of infection, it holds a bad pre-eminence. Fortunately, however, it is getting more common every day to put the crew in a deck-house, in order to utilize the fore-castle for cargo. The house on deck can be, and generally is, much better ventilated; and much freer from that dampness which in the other locality causes so much disease.

The seamen's food is ostensibly regulated by law; but lack of proper inspection renders the statute inoperative.

A large proportion of the phthisis, and part of the rheumatism, so terribly prevalent among sailors, are believed to be due to the bad air and filthy dampness of their quarters. So far as this is true, those diseases may be prevented.

Dr. A. B. Bancroft gives the results of his experience of five years in Chelsea Hospital, near Boston, in a paper upon *Sailors and their Diseases*, as there observed.

Dr. F. R. Sturgis contributes a paper upon *Syphilis; the Scourge of the Sailor and the Public Health*. This is an abstract of one presented at the meeting of the American Public Health Association in this city last November. Not originally a very fatal disease, it becomes by inheritance alarmingly so. It is also only in this way that it can be said to influence especially the course or result of other diseases. The writer seems to incline to the opinion that the *direct* evil results due to syphilis have been exaggerated.

The longest article is one by Frank W. Reilley, M.D., upon the *Yellow Fever Epidemic* of 1873. This was prepared in obedience to a resolution passed by Congress, ordering a brief history of the disease as it appeared during that year in the ports of the United States. It appears to be an intelligent and valuable contribution to the history of this epidemic. The writer believes the disease to originate in tropical lands, and to appear in our Southern States only by importation of its germs. These, however, may survive a winter, and cause a fresh epidemic without additional importation. The germs are absolutely destroyed when exposed to a temperature of 30° F. Quarantine, the writer has little faith in. Isolation of cases, general sanitary measures, and thorough disinfection of vessels, cargoes, clothes of sailors, etc., are the means most effective to limit the spread of the disease.

One other brief essay treats of yellow fever at Pensacola in 1874. Several other papers discuss matters connected with the service which have come under the observation of the writers.

B. L. R.

ART. XLIV.—*A Manual of Hygiene, Public and Private, and Compendium of Sanitary Laws; for the Information and Guidance of Public Health Authorities, Officers of Health, and Sanitarians generally.* By CHARLES A. CAMERON, Ph.D., M.D., F.R.C.S.I., L.K., and Q.C.P.I., Professor of Hygiene Royal College of Surgeons, Ireland; Medical Officer of Health for Dublin; Public Analyst for the cities of Dublin, Limerick, etc. etc. With thirty-five illustrations.

DR. CAMERON has had considerable experience as a practical sanitarian, as well as in teaching and writing upon hygiene. He published in 1868 a small volume, containing twelve lectures on public health, delivered in the Royal College of Surgeons, Dublin. He is also known to many readers by his "Reports on Public Health," appearing for several years in the *Dublin Journal of Medical Science*.

The present work is mainly designed for the use of officers of health. Nearly one-third of its 475 pages is occupied with an account of the duties of sanitary authorities, and (in small type at the end of the volume) sanitary statutes applicable to Ireland. While the latter portion, including more than a hundred pages, is almost entirely surplusage to the ordinary reader or student of hygiene, the rest of the book contains a large amount of valuable information upon many important topics. Chemical subjects, especially food and water analysis, are very well and fully dealt with. Dr. Cameron is evidently familiar with the now rapidly increasing literature of hygiene. He quotes not only the German and French, as well as British authorities, but also the reports of the Boards of Health of Massachusetts, California, and Philadelphia, Dr. Ham-

mond's work on Hygiene, and one, at least, of our American medical journals. The work before us is well worthy of study and possession for reference by every one who desires to become acquainted with the present state of sanitary science, and with its most approved processes of investigation and application.
H. H.

ART. XLV.—*A Series of American Clinical Lectures.* Edited by E. C. SEGUIN, M.D. Vol. I. No. I.—On Disease of the Hip-joint. By LEWIS A. SAYRE, M.D., Prof. of Orthopedic Surgery and Clinical Surgery in Bellevue Hospital Medical College, New York. 8vo. pp. 24. New York: G. P. Putnam's Sons, 1875.

FROM a prospectus on the cover of this elegantly printed pamphlet, we learn that it is the publisher's intention to issue a series of Clinical Lectures, on the plan of the well-known *Sammlung klinischer Vorträge*, edited by Prof. R. Volkmann. Should the enterprise prove successful, the series will, we feel sure, form a collection of great value, and one which will very satisfactorily exhibit the present state of medical science in America.

Prof. Sayre's lecture, which is the first of the series, furnishes an excellent account of hip-joint disease, and of the modes of treatment which are preferred by the lecturer, who is well known as one of the highest living authorities on this particular subject.

Should the ensuing numbers be devoted to topics upon which the writers can equally speak *ex cathedra*, the success of the undertaking in a scientific point of view, at least, will be assured.
J. A., JR.

ART. XLVI.—*Annali Universali di Medicina e Chirurgia*, vol. 231, Milan, Jan. and Feb., 1875. Compiled by Drs. OMODEI, CALDERINI, and GRIFFINI, under direction of Dr. MALACCHIA DE CRISTOFORIS, and a council composed of Profs. De Giovanni and Rovida on Clinical Medicine; Prof. A. Corradi, Public Medicine; Prof. Scarenzio and Dr. Turati, Surgery; and Dr. Porro, Obstetrics.

THIS is an old medical periodical, although but little known with us, and occupies a leading position among the journals of Italy, furnishing to its readers a large amount of valuable matter upon the current medical literature of the day. It is now in its 61st year, having been commenced in 1814, and is published by the Rechiedei Brothers of Milan, in monthly numbers, each copy containing about 200 pages 8vo., the February one being the 692d of the series.

Less than half of the two numbers before us consists of original matter, the balance being made up of reviews of medical, surgical, pathological, psychological, and other books, or monographs relating to medical science; the references being numerous, and comments short and generally much condensed. A few of the reviews are upon English, French, German, and American articles; but the great mass is purely Italian, and shows the attention that is being paid to medicine in Italy.

As it is impossible to notice the numerous articles presented, we will confine our attention to one of a curious nature; and of extreme rarity, even among

the dark-coloured peasantry of Italy. The case referred to is one of "*abnormal congenital distribution of the cutaneous pigment*," by Drs. Forlanini and Gatti; and is accompanied by a good half-length photograph, showing the peculiar appearance of the skin covering the neck, chest, and abdomen of a girl of seventeen, who was the subject of this singular and rare type of discoloration; the *congenital* being much more seldom met with than the *acquired* disease. The case in question is also referred to as an instance of *congenital albinism associated with congenital nigrities*, which is not exactly its true character, as the achromia is associated with hyperchromia in a variety of shades, from a light brown to nearly black. The following is a condensed account of the appearance of the girl:—

Hair abundant, strong, black, and with a slightly reddish tint; eyes light-brown, with the superior segments of the irides of a darker shade. Complexion dark-brown, as with the Italian peasantry generally, marked abundantly with freckle-like spots of a deeper shade, and here and there with larger stains of a blackish hue. Neck generally of the same colour as the face. Laryngo-thyroidæan region of a milk-white shade; crycoid region marked with a brown-coloured band, below which are numerous brown marks here and there confluent. The lower half of the lateral region of the neck, the supra and infra-clavicular spaces, and the upper anterior part of the chest are also milk-white. The mammæ are brown, except the lower internal half of the left areola and nipple which are white, making a marked contrast with the dark-brown of the other half, and the still darker of the right areola. Three large white spots are shown upon the abdomen, one upon the epigastrium, a smaller in the umbilical region, and the third of a crescentic form over the lower belly and inguinal regions. The back of the trunk is brown, with areas of lighter shades, and two large white ones over the vertebræ in the dorsal and lumbar regions.

We have thus given in sufficient detail all the more interesting points in the appearances as set forth in the original record of this rare and curious case. In the acquired disease, such as is occasionally found in pregnancy, the deposits of colour are sometimes quite *black*, hence the name *nigrities* as applied to it. Dr. Forlanini reports an instance of acquired achromia and hyperchromia, in a man of 44 years of age, following confluent smallpox, in whom numerous white and brown spots appeared over the whole body from head to foot. The name of "*Anthropoleopardalisdemia*" has been proposed by an Italian dermatologist for this form of disease, rather a complex title for any but a German student. In simple hyperchromia, the dark spots appear as an excess of pigment upon an otherwise normal skin; but in the case of the girl recorded, it was computed that the amount of pigment was normal, but that it was irregularly, instead of being uniformly distributed over the body. Excessive deposits of pigment even to blackness, sometimes take place as a diseased condition in fair-skinned subjects; and total loss of colour, in the black race; but the association of achromia, with varying grades of hyperchromia, appears to be most prevalent among the tawny races. It is remarkable, that it so rarely presents itself as a congenital malformation, when it might be supposed that irregular distribution of skin-pigment would be somewhat prevalent, where there is so much to be deposited as in the *contadini*.

We are sorry that we cannot commend the letter-press and paper of the *Annali*, which, like that of Italian books in general, is very inferior; we have noticed, however, an attempt to improve the last number. As a medical periodical there is much to recommend the publication.

R. P. H.

ART. XLVII.—*Annales des Maladies de l'Oreille et du Larynx (Otoscopie, Laryngoscopie, Rhinoscopie)*. Fondées et publiées par MM. LADREIT DE LACHARRIÈRE, ISAMBERT, KRISHABER. Tome I., No. 1. Mars, 1875. Paris.

THE editors of this new journal have been unusually fortunate in being able to secure, as a corps of co-labourers, men who, like themselves, are already fully identified with the special departments in medicine to which this periodical is to be exclusively devoted. The names of Bonnafont, Fournier, Cusco, Levi, Demarquay, Bécлар, Saint-Germain, and Duplay, are in themselves a sufficient guarantee of the authoritative position this journal is bound to attain. Of the editors themselves, Isambert has long been one of the most successful Parisian laryngoscopists; and Krishaber's able contributions on the same subject have won for him a world-wide reputation.

The *Annales* open with a lengthy introduction, a *quasi* apology for its creation being made by dwelling upon the fact that the time for universal savants has gone by; that in medicine, as everywhere else, the division of labour has become a necessity. Unanswerable as this line of argument is, yet the possibility of such a journal holding its own, if not the very *raison d'être*, lies in the fact that the introduction of the concave mirror into aural surgery has rescued it from the hands of charlatans, and elevated laryngoscopy into a scientific specialty. Otology has long boasted of its own periodical journals, but beyond Schrötter's *Jahresbericht der Klinik für Laryngoscopie* there exists no special journal upon the diseases of the throat. The advantages of combining the study of these two closely allied specialties are so apparent and numerous as to require no further commendation.

The articles contained in this number are—

1. Classification of the maladies of the Larynx and Pharynx, by Isambert. Quite ingenious, but adds little to our knowledge of the pathological conditions.

2. M. Saint-Germain upon Amygdalotomy. This promises to be a very interesting and exhaustive article. In the present number a complete historical account of the different operations, as practised from the earliest times to the present day, is given.

3. Ménière's Disease, and Vertigo in the Affections of the Ear, by Ladreit de Lacharrière. Two views are held as to the seat of this disease, one that it is characterized by lesions of the labyrinth, and nearly always followed by deafness; the other admits of the lesion being also in the middle ear, and even outside of the tympanum. The first view is the one most generally accepted; the author also adopts it, stating that it is an easy matter to discriminate those affections of the middle which are attended with deafness, subjective noises, and vertigo from true Ménière's disease. Vertigo and roaring are the most characteristic symptoms of the disease; deafness, however, is never absent, and, after all the other morbid phenomena have disappeared, more or less complete deafness generally persists. Often there is a brusque and sudden onset; at other times, on the contrary, it advances in a very insidious manner, but even then attacks occur in which the vertigo and other symptoms are greatly aggravated.

The lesions in the labyrinth may be hemorrhagic, inflammatory, or syphilitic in their origin. When the malady assumes an apoplectic form, local extractions of blood, employed with derivatives, are claimed by the author to render veritable services. In the labyrinthal inflammations, antiphlogistics are

vaunted; the iodides, etc. for the syphilitic affections. The author says that the deafness may often be ameliorated. This statement needs confirmatory observation, and tends rather to weaken his assertion that the inner ear is invariably implicated. Voury and others state that the deafness is incurable.

Krishaber contributes an article upon Rhinoscopy. So far he only considers the methods of examining the naso-pharyngeal cavity. This part of the subject, if not hackneyed, has at least been written upon before. Léon Labbé gives a very interesting history of the removal of a large fibro-mucous polyp from the naso-pharyngeal region by the aid of the galvano-cantery. Laryngopathies of the primary phases of syphilis form a very interesting series of cases recorded by Krishaber and Mauriac. Lévi writes on Parasitic Otitis. He gets rid of the troublesome *Aspergillus* by simply pencilling the external auditory canal with nitrate of silver, which is immediately neutralized with chloride of sodium. A review of the most recent literature concludes this very able number, which, we trust, may prove to be the first of a long and successful series.

R. M. B.

ART. XLVIII.—*Anatomy of the Invertebrata*. By C. W. V. SIEBOLD. Translated from the German, with additions and notes by WALDO I. BURNETT, M.D. Boston: James Campbell, 1874.

THIS well-known volume is here presented in a new dress, but differs in no other way from the original sheets of 1854. The progress of the science since that time would have required extensive changes to be made in every department. As it is, the book is well worth possessing, indeed to the special student it is indispensable; for in no other work of the kind is there so complete a bibliographical record. It cannot, however, present a just claim upon the time of the beginner.

H. A.

ART. XLIX.—*The Legitimate Influence of Epilepsy upon Criminal Responsibility*. By MEREDITH CLYMER, M.D. (Univ. Penn.), President of the New York Society of Neurology and Electrology, etc. etc. 8vo. pp. 25. New York, 1874.

THIS pamphlet on Epilepsy and Responsibility contains generally sound doctrine and well-selected illustrative cases. A few of these are new, but most of them have been before published.

The truths here stated and illustrated are of immense importance. It is especially needful that the legal profession should be acquainted with them. For this reason we are glad that Dr. Clymer has made this address before a medico-legal society, though it contains nothing especially original in doctrine.

B. L. R.

QUARTERLY SUMMARY
OF THE
IMPROVEMENTS AND DISCOVERIES
IN THE
MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *Minute Anatomy of the Process of Healing of the Skin by Granulation.*—Prof. THIERSCH has investigated this subject by studying the development of portions of skin grafted on wounds by Reverdin's process.¹ Selecting a patient who was to have his leg amputated, Thiersch grafted portions of skin on to the limb from time to time, the last occasion being eighteen hours before the amputation. The vessels of the leg were injected after its removal, and a number of important points were then determined. It was found that union occurs without a layer of structureless cementing substance, not more than a leucocyte or two separating the united parts. Successful union is accompanied with the inosculation of the vessels, which can be fully injected from the side of the vessels of the granulating surface as early as eighteen hours after grafting. The connection between the two sets of vessels is established by intercellular passages, which become developed into regular vessels in a few days. Nevertheless, the vessels of the graft undergo a secondary change; they become wide, dilated, shoot out buds and processes, and, in short, assume quite an embryonal character. Should the primary inosculation fail, it is possible that true development of vessels may occur. Under these circumstances the epidermis and papillary layer of the graft fall off, and the transplantation appears to have failed. This, however, is not the case, for the subcutaneous tissue with the remains of the sweat-glands continues the healing process. By and by an epithelium makes its appearance in the situation of the supposed unsuccessful graft, which is probably derived from the remains of the sudoriparous glands. Thiersch states that in many cases it is advisable to modify M. Reverdin's method of grafting, and to first remove the granulations of the wound by a horizontal cut, and then, after a few hours, when inflammation has begun, to perform the transplantation with skin which has previously been contused or inflamed.—*Med. Times and Gaz.*, April 10, 1875.

2. *Experiments on the Electrical Irritability of the Surface of the Cerebral Hemispheres.*—Prof. L. HERMANN instituted a series of experiments with a view of determining how far Fritsch and Hitzig are justified in their conclusion that the results in their experiments are due to the direct stimulation of superficially placed motor centres and not to stimuli conducted to deeply-lying centres. He controverts the idea that owing to the close proximity of the electrodes to one another the presence of deeply-passing currents may be

¹ Centrallblatt, 1875, No. 17; and V. Langenbeck's Archiv, 1874, No. 17.

denied; and he adduces the results of his own experiments to refute the deductions drawn from the sharply defined limits of the specific irritation-areas. These experiments, seven in number, were made on middle-sized dogs. In each case the position of the principal specific irritation-areas was determined. This was found to differ somewhat in the various individuals. Each area was well-defined for any given intensity of current, but an increase in this latter was accompanied by a corresponding increase in the area. The intensity of current, whether constant or induced, necessary for the production of the required results was also surprisingly great. The special experiments were all made on the irritation-area for the hind leg. The unexpectedly steady continuance of the results, even when the surface had become dry, gave Hermann the cue to his further experiments. He cauterized the area in one case with strong nitric acid, and in another with acetic acid containing potassium ferrocyanide. Even after this, which was subsequently found to have destroyed the outer third of the gray substance, the results on irritation remained unaltered. In other experiments a cylinder of brain substance was separated from its surroundings by the use of a brass cork-borer. The usual results were still always producible, but required a somewhat intensified current for their production. The cylinder was afterwards separated from its deep connections and removed. The results were then also constantly produced, whether the electrodes were placed in the pit or on the surface of its margin. In the seventh experiment the area was cauterized with pure nitric acid, and the burnt tissue subsequently removed by the knife. This double process was then repeated several times until there was an excavation of one cm. deep. The results of electrical irritation remained unaltered. Hermann concludes that the theory of these superficial areas being motor centres is untenable. Apart from the generally received-opinion that a motor centre can never be recognized by direct irritation, the fact that the phenomena of motion are producible after the surface has been destroyed, requires for its explanation the admission of a conductivity to a deeply-seated centre, and therefore the necessity for believing in the motor centre on the surface vanishes. He furthermore noticed that in some cases a sulcus traversed the centre for the hind leg, while in others no such sulcus existed. The actual size of the area, independent of the sulcus, was in all cases as nearly as possible identical. This, according to Hitzig's hypothesis, offers us either horn of the dilemma, namely, either that the centre for the hind leg is enormously greater in those individuals in which the sulcus exists, or that the surface of the sulcus has nothing to do with this special function, but that we have the centre for one function divided into two distinct parts by that for another.—*Irish Hosp. Gaz.*, May 1, 1875, from *Pflüger's Archiv*, 2d Heft, 1875.

MATERIA MEDICA, GENERAL THERAPEUTICS, AND PHARMACY.

3. *Anæsthesia*.—The question of anæsthesia is one of great interest to surgeons and physiologists. Amongst recent researches on the subject, it is important to mention those of M. BUDIN, of Paris. The conclusions at which he has arrived are founded on a large number of clinical observations and a great many experiments conducted during several months in the laboratory of Professor Vulpian. As to the clinical observations, they were carried on in the wards of M. Léon Labbé, at La Pitié. Both experimental and clinical investigations have been lately published under the joint names of Budin and Coyne; the latter having aided M. Budin in his laboratory researches. The labours of these authors bear upon various points; but our space does not allow us to do more than notice the most important of them.¹

¹ For further information the following publications may be consulted: "De l'Etat de la Pupille dans l'Anesthésie Chirurgicale," par P. Budin. "Progrès

The object of MM. Budin and Coyne was to investigate the state of the pupil (1) during anæsthesia under chloroform and chloral; (2) during the efforts of vomiting; and (3) during asphyxia. From their clinical and physiological observations they have drawn conclusions of much practical importance, which we will endeavour to sum up briefly.

The administration of chloroform produces in the situation of the pupil various modifications connected with the state of sensibility. During the period of excitement (when it can be ascertained) the pupil is dilated. When this period is passed, the pupil contracts progressively, though it still retains its sensibility to excitement. Thus, during this period, in which anæsthesia is incomplete, the pupil is seen to dilate under the influence of various sorts of excitement exerted on the patient, who will then move about, groan, or utter cries. During the period of complete anæsthesia, on the contrary, or of profound surgical anæsthesia in other words, two constant phenomena are observed in the situation of the pupil: (1) absolute immobility; (2) a contracted state of the organ. There consequently exists a connection between the absolute insensibility of the subject and contraction with immobility of the pupil; between the return of sensibility in the patient and dilatation with mobility of the organ. The condition of the pupil may therefore, so far as regards sensibility, serve as a guide in the administration of chloroform. During protracted surgical operations, when it is necessary to keep the patient in complete insensibility, anæsthesia must be conducted in such a way as to maintain the pupils constantly contracted and immovable. It is important, however, to remark, that, although the state of the iris may serve as a guide for the management of anæsthesia, yet it does not make the surgeon aware of the imminence of danger; it is always the pulse, respiration, and general condition of the patient that he must watch over for any such intimations. Lastly, the efforts of vomiting may produce dilatation of the pupils, bring on cessation of insensibility, and awaken the patient; they partially destroy the effects of anæsthesia.

The greater part of these results had already been published in September last by M. Budin. They were sharply attacked by M. Schiff in *L'Imparziale*, of Florence. According to M. Schiff all the results were erroneous. Chloroform produced, during complete anæsthesia, dilatation and not contraction of the pupil. All the practical consequences drawn from M. Budin's investigations were therefore declared to be false, and furthermore the administration of chloroform according to the manner advocated by the French author exposed the patient to almost certain death. This was speedily answered by MM. Budin and Coyne, who repeated Schiff's experiments, and showed that the Florence professor, by administering chloroform in a bag, produced *asphyxic anæsthesia*, and not *chloroformic anæsthesia*. The importance of these experiments renders some description of them indispensable.

That of M. Schiff is as follows: He injects chloral into a dog, and obtains complete anæsthesia; the pupil is then punctiform. To the same dog he afterwards administers chloroform by means of a bag, and dilatation of the pupil is the result. When he withdraws the chloroform the pupil contracts; if he re-applies it the pupil again dilates.

The French investigators adopt a different kind of experimentation, dividing it, as it were, into two stages. First, they inject from one-fourth to one-half of a drachm of chloral into a dog; the pupil becomes punctiform. Chloroform is then applied in the open air (*i. e.*, without being contained in any recipient), and the pupil still remains punctiform during the entire period of complete anæsthesia, carried on for one hour. This result, observed in the absence of every cause of asphyxia, is totally different from that obtained by Schiff. In a second experiment, they introduce into the windpipe of a dog an open canula, provided with a cock. Three-fourths of a drachm of chloral are then injected into the femoral vein, and the punctiform pupil which attends total anæsthesia

is the result. They then close the cock, and as asphyxia comes on the pupil dilates. They open the cock, and the pupil contracts; they shut it again and the pupil dilates. Therefore *without chloroform* and with *simple asphyxia* they reproduce the results obtained by Schiff.

Other experiments of MM. Budin and Coyne show that asphyxia produces in the situation of the pupil different phenomena from those observed in chloroformic anæsthesia. In asphyxia there first exists an intermediate condition of the pupil, or one of moderate dilatation; then a most extensive dilatation when the convulsive phenomena make their appearance. Now it is very important, from a practical point of view, and as MM. Sédillot and Claude Bernard have especially shown, to avoid a state of asphyxia; not that asphyxia immediately occasions death, but because it is certain than when phenomena of asphyxia exist at the beginning of chloroformization, syncope occurs much more readily.

Such are the principal points brought to light by MM. Budin and Coyne. Some of the results announced in their publications have already been confirmed; as, for instance, those recently mentioned by Dr. Albert Bergeron in his treatise on "Chloroform in the Surgery of Children," embodying researches carried on in the laboratory of La Charité. The others are left open to the elucidation which must result from further research.—*Lancet*, April 17, 1875.

4. *Anæsthetic Action of Bromoform*.—Dr. RABUTEAU reported to the Biological Society of Paris, some cases, showing that the application of bromoform to the skin produced anæsthesia without the revulsive and painful effects of the application of chloroform.—*Gazette Hebdom. de Méd. et de Chirurg.*, May 7, 1875.

5. *Action of Subcutaneous Injections of Morphia*.—CHOUPE finds, as the result of a thousand experiments on himself, that the subcutaneous injection of morphia at the painful part produces its anæsthetic effect from two to two and a half minutes sooner than when it is made elsewhere. The pain ceases sooner than can be explained by supposing the morphia to act through the general system. A further proof of the local action of morphia is found in the use of concentrated solutions. While a weak solution of morphia in distilled water (1 in 150) produced severe pain at the point of injection, the injection of stronger solutions (1 in 50 and 1 in 30) was quite painless.—*Brit. Med. Journ.*, April 10, 1875, from *Gaz. Méd. de Paris*, No. 35, 1874.

6. *Nitrite of Amyl—its Effects, and its Action and Influences in Counteracting the Dangerous Effects of Chloroform*.—Mr. C. BADER, Ophthalmic Surgeon, Guy's Hospital, states (*Lancet*, May 8, 1875) that some years ago, when nitrite of amyl was first used at Guy's Hospital, Dr. Goodhart and himself studied its effects, when taken internally, upon the bloodvessels in the healthy optic disk and retina. The effect is as rapid as it is striking. Three or four seconds after taking three drops of the drug on sugar, the bloodvessels of the retina (arteries and veins, but especially the veins) become enormously dilated and gorged with blood, leaving no doubt as to simultaneously existing cerebral hyperæmia, with greatly accelerated circulation of blood.

Lately, after observing upon himself the effects of inhalation of the vapour of the nitrite of amyl, it occurred to him that in cases of faintness or of defective breathing or heart's action, while under the influence of an anæsthetic, nitrite of amyl might be of use. A few cases will show the encouraging effects of this agent.

CASE 1. Given a mixture of alcohol, ether, and chloroform. Young man, hydrocephalic, inherited syphilis; iridectomized on both eyes; suddenly became pale, deeply insensible, with pulse and respiration very defective. Lint, with a few (three) drops of the nitrite of amyl, was placed over nose and mouth. In two or three seconds a deep inspiration, followed by others, flushed face, quick pulse, and return of sensibility, were observed.

CASE 2. Given chloroform. A boy, pale, fat, blue lips and cheeks, became suddenly very faint (blue lips, blood turning black, breathing very imperfect).

The same quick result, with vomiting, followed the inhalation of the nitrite of amyl (three drops).

CASE 3. Given chloroform. A middle-aged woman; suddenly became blue in the face and stertorous (tongue falling back). Lint, with ten drops of the nitrite of amyl, was placed over mouth and nose. In a few seconds the blueness and stertorous breathing gave way to good colour, regular breathing, and sickness and vomiting, though no food had been given for several hours.

The most striking effects of the nitrite of amyl were the quick restoration of breathing, of a good colour, and the rapid appearance of sickness. It remains to be shown whether injection of this agent will have a still better effect.

[It is just to state that Dr. F. A. Burrall, of New York, from a *priori* reasoning, recommended in the *New York Medical Gazette* (June 11, 1870), the use of the nitrite of amyl, in chloroform poisoning. "It [nitrite of amyl] would seem worthy of a trial," he remarks, "in the threatened syncope from chloroform; since the inhalation of a few drops is followed by marked acceleration of the heart and flushing of the face."]

7. *Therapeutic Action of Valerianate of Caffeine*.—Dr. PARET, in his *Thèse de Paris*, 1874, No. 464, describes this substance as a product crystallized in white flakes, having a very disagreeable odour like decayed cheese. He has administered it in the form of ten centigramme pills, of which he gives from two to three. It may also be given as a syrup containing ten centigrammes of valerianate of caffeine. Dr. Paret comes to the conclusions, 1. That valerianate of caffeine has, in some cases, appeared to put an end to the nervous vomitings coexistent with hysteria; 2. That this medicine had given to invalids increase of a decided appetite, and a physical as well as moral strength which they had not previously possessed; 3. That the vomitings of consumptive patients had not been checked by it. It has also been tried in the sickness of pregnancy, but without favourable results. It appears that Dr. Labadie-Lagrave has twice used the syrup of valerianate of caffeine for infantile whooping-cough, and that this medicine, taken in doses of two fluidrachms per diem, produced a very marked improvement. The fits of coughing, which at first amounted to fifteen daily, fell to four, after a week's treatment.—*London Med. Record*, May 12, 1875.

8. *Therapeutic Value of Balsam of Copaiba*.—Surgeon A. R. HALL, Army Medical Department, claims (*The Practitioner*, April, 1875) for the balsam of copaiba marvellous curative powers in various diseases. He has given it with great benefit in cases of iritis and scleritis. "The horrible pain of scleritis," he says, "the eye being described as feeling like a 'red-hot ball,' I have found often to subside after four or five large doses of the balsam, and the inflammation disappear. At Seetapore, in Oudh, during the year 1872, I had at one time more than thirty children, suffering from purulent ophthalmia, under my care. I treated them all by simply painting the lower eyelids, upper part of the cheeks, and temples, with the pure balsam of copaiba, and they all got well quickly without any damage to the eyes."

He relates a case which he saw in consultation, a patient whose right eye was highly inflamed, the whole anterior chamber filled with pus and the sight, of course, entirely lost. "I said that I had seen such good results following the exhibition of the balsam in iritis, that it might be tried as a last resort. Two drachms were therefore ordered, in mucilage, three times a day. Two days after, the pain he had been suffering from subsided: daily, the pus could be seen to be gradually disappearing. At the end of ten days he could see the length of the ward, and after twenty days the eye was quite well."

He thinks that in threatened mammary abscess it may often be employed with advantage.

"Chronic rheumatism," he says, "both of the muscles and joints, particularly in old people, who confess that they feel much better after a glass (or two) of hot gin and water when going to bed, frequently disappears after a few drachm doses of the balsam, combined with some astringent to prevent purging. I have heard several say that it 'seems to warm the joints.'" He also claims that it is useful in skin diseases.

9. *Action of Iodine and Mercury.*—According to WREDEN, mercurial solutions act on iodized persons, and iodine solutions on mercurialized patients twice or three times as quickly, whether used externally or internally, as when these medicines are given separately. He believes that this depends on the formation of biniodide of mercury in the tissues of the body. If a portion of the skin be rubbed with mercurial ointment, and carefully washed after a few days, the inunction of iodine ointment produces the same symptoms of inflammation as arise from the inunction of biniodide of mercury. If a solution of corrosive sublimate (one or two grains in an ounce of distilled water) be dropped into the ear, no inflammation is produced, even though the application be repeated for several days; but it appears if, even after most careful cleansing, a solution of iodide of potassium (five grains to the ounce) be dropped in. If mercury have not been used, a solution of twenty or thirty grains of iodide of potassium is easily borne. Wreden has observed that, in patients who bore painting with iodine well, the skin, under the use of mercurial treatment by inunction, and even under the use of Zittman's decoction, became exceedingly sensitive to iodine. He also remarks that the internal use of iodide of potassium by patients subjected to an energetic course of mercurial inunction, produces more or less gastro-intestinal irritation, which is not the case in the same persons when even much larger doses of the iodide are given.—*Brit. Med. Journ.*, April 10, 1875, from *Med. Neuigkeiten*, 1874.

10. *Bromide of Lithium.*—Dr. ROUBAUD communicated (April 13) to the Academy of Medicine the following conclusion derived from his investigations regarding this medicine.

1. That the bromide of lithium has a double action.
2. That it possesses in a high degree the acknowledged lithontriptic powers of the salts of lithia.
3. That it acts more energetically than other bromides on the reflex sensibility without unfavourably acting on the heart like the bromide of potassium.
4. That consequently it holds the first rank among antilithic and sedative medicaments, and that it is especially valuable in the disturbance of the uric diatheses accompanied by pain and in the neuroses which are so often complicated with the presence of uric acid.—*Gazette Hebdom.*, April 16, 1875.

11. *Action of Iodide of Potassium in the Human Organism.*—Prof. BINZ of Bonn believes that iodide of potassium undergoes the following changes when taken internally. In a healthy stomach, a part is changed by the hydrochloric acid into hydriodic acid ($KI + HCl = KCl + HI$); another portion is acted on by the chloride of sodium, so that iodide of sodium is formed; and, if the dose be large enough, a part remains unaltered. All the three combinations quickly pass into the circulation. The hydriodic acid here meets with soda, and forms iodide of sodium; but the alkaline combinations of iodine are again acted on in the tissue by carbonic and other acids, and iodine is set free. This free iodine has the property of combining with certain albuminous bodies; and in this, Binz believes, lies the explanation of the therapeutic action of the preparations of iodine.—*Brit. Med. Journ.*, April 3, 1875.

12. *Chloral and Bromide of Potassium in Enema, for Diseases of Women.*—Dr. G. DE G. GRIFFITH recommends (*Brit. Med. Journ.*, May 8, 1875) the administration of chloral and bromide of potassium by enema in diseases of women as the best, since it does not nauseate, or give that unpleasant taste in the mouth which remains long with some patients, nor does it occasion the burning in the mouth, throat, and stomach, of which many patients complain, a sensation which may be prevented in the rectum by beating up the drug with a raw egg, or even two raw eggs, a little warm milk being added to further the solution. One great advantage is that the gastric nerves are not affected, as they are when the medicine is taken by the mouth; in which latter case they seem completely deadened, or, as it were, narcotized, a result that tends to impair the appetite.

He relates a case of violent puerperal mania in which, after quieting the patient with chloroform, he gave nutrient injections, to which he added bromide potassium one drachm. and half a drachm of chloral, with the best effects.

Dr. G. says that he has since used the chloral in half drachm doses, with a lady suffering the agonies of gall-stones, and in whom the stomach was so constantly irritable that no medicine could be retained; chloroform inhalation to narcotism, morphia by subcutaneous injection, and every conceivable remedy, had been tried to allay pain, and procure rest and sleep, but had all failed. In ten to fifteen minutes after the rectal injection of chloral, pain was assuaged, and in half an hour sleep was procured. I have in this manner also used it when menstrual pain and sickness could perhaps have been relieved in no other way; also in cases of uterine and ovarian irritation, where pain, such as we have in those affections, varied from the mildest to the severest states. In irritable rectum, also, I have found it most efficacious, and have just commenced to use it as a vaginal suppository. In uterine, ovarian, and rectal cases, it is an especially valuable agent, inasmuch as it is brought into immediate contact with the affected nerves, and acts upon them directly, deadening any hyperæsthetic conditions, and relieving pain.

13. *Sulphate of Chinchonidia*.—The British Government having ordered that the therapeutic value of this drug should be tried, Surgeon-Major GEORGE Y. HUNTER reports (*Lancet*, May 15, 1875) the results of his trials with it in the hospitals of the House of Correction and the County Gaol of Bombay. "The drug," he states, "was employed internally (*per viam naturalem*) for malarious fever, in doses of from five to ten grains, as well as hypodermically in a solution containing the following proportions: Sulphate of chinchonidia, five grains; dilute sulphuric acid, five minims; water, ten minims.

"From September, 1874, to February, 1875—a period of nearly six months, the term fixed upon for the experiment—I treated fifty-five cases of fever, chiefly intermittent of a mild form, due to sudden changes of weather, exposure to cold, privation, etc., or to indiscretions in diet. In the majority of these cases three days (equivalent to a consumption of ninety grains of the alkaloid at ten grains thrice daily) sufficed to effect a cure, or, perhaps I ought more correctly to say, to see an end of the slight attack. In some instances of a severer type (in men who came from malarious districts, for example) the chinchonidia completely failed to check the fever, and quinia had to be resorted to. In one bad case of remittent fever, which I regret to say ended fatally, chinchonidia was tried for two days, and discontinued on account of its proving ineffectual, thus strengthening my impression that it is worse than useless to depend upon this drug in severe fever set up by the poison of malaria. In a few cases its subcutaneous injection appeared to be of service, and I observed that no troublesome inflammation at the point of insertion followed its use.

"I may mention that in nearly every case in which chinchonidia was administered, headache, almost amounting to semi-congestion of the brain, resulted, which accords with the experience of some who tested the therapeutic value of this alkaloid on a former occasion. To obviate the symptom just alluded to, it was the practice in my hospitals to combine one grain of opium with ten of the chinchonidia. Sickness of stomach was also a frequent symptom, more often than it was noticed from quinia, which latter is undoubtedly a cholagogue, whereas one of the effects of chinchonidia is to lock up the secretions.

"I am of opinion that in some cases of a mild form of fever, for which ninety grains of chinchonidia were given, two or three grains of quinia twice or thrice daily for the same time would have stopped the fever. Perhaps it would be a fair representation of the case to say that ten grains of chinchonidia would be required to produce the same effect as three grains of quinia given in mild cases, and even then I am not sure that it would not be necessary to continue the treatment by the former longer.

"I think the drug for its therapeutic value might be classed with quinoidia, liquor quiniæ amorph., chirettine, bebeerine, etc., and their effects as antiperiodics is doubtful. Certainly chinchonidia cannot be ranked as an antiperiodic with quinia, and is not a specific for fever in the sense that remedy is. It

may be of service as a good tonic after fever has been controlled by means of quinia, and perhaps prevent relapses; it might also answer as a prophylactic to those living in, or travelling through, malarious districts; but I would never rely upon it in bad cases of malarious fever, although probably it might suffice to check it in old feverish subjects, in whom the disease had been re-lighted up by transitions of temperature, or by some disorder of the general health."

The conclusion he arrives at is, that the sulphate of chinchonidia is greatly inferior in value to quinia, and has no advantage over it in an economic point of view.

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

14. *On Post-paralytic Chorea.*—It is well known that choreal movements, in some cases of hemichorea, are replaced by hemiplegia; but it is not so well known that choreoid movements sometimes follow hemiplegia. There are to be found, in what we may call the hemiplegic region, all varieties of mobile disorders. There are curious mixtures of palsy and spasm, and the limb which the patient cannot use may often twist about to his great discomfort. For these over-movements thus localized, Dr. HUGHLINGS JACKSON has suggested the general name of Hemikinesis. In close relationship with hemiplegia is hemispasm—convulsion of one side. Not only does hemiplegia (temporary) follow this variety of hemikinesis, but not unfrequently convulsion attacks a patient partially hemiplegic, and begins in and affects first and most the parts paralyzed. In adult patients, hemiplegic from infancy, there are frequently over-movements of the paralyzed arm, and in less degree, of the leg; but Dr. Jackson has not seen movements like ordinary chorea in such persons. The movements lack the punctuation of chorea; they are not a succession of different movements, but a gliding of movements into one another. In some of these cases the patient is subject to convulsions as well, which, however, rarely begin deliberately in the side of the body most affected by the palsy and the over-movement. In some cases of tumour of the brain, as Todd and Tuckwell have pointed out, chorea-like movements result. Again, in some cases of "coarse disease," syphilitic, for example, of the surface of a cerebral hemisphere which has led to epileptic hemiplegia, there are, during recovery from that hemiplegia, various kinds of slight movements; the arm will often jerk fitfully, the thumb and index finger will move much as they do in paralysis agitans. In some cases the limb is still when the patient is not trying to move it; and yet, when he tries, there is tremor indistinguishable from that of disseminated sclerosis.

One advantage likely to result from the comparative study of the different kinds of movements of the hemiplegic region in relation to loss of movement in that region (hemiplegic), is that the needful empirical study of cases will be controlled by scientific method.

In an exceedingly valuable contribution to the *American Journal of the Medical Sciences*, October, 1874, Dr. Weir Mitchell calls attention to a disorder which he names post-paralytic chorea.

In one of his recent masterly lectures (*Le Progrès Médical*), CHARCOT relates three cases of post-hemiplegic chorea of Dr. Weir Mitchell. The first patient, M. R., aged fifty-one, had an apoplectic attack ten years ago, with loss of consciousness and vomiting; this was followed by complete right hemiplegia and ataxy of articulation. At the end of six months she was able to get about, and, as power of movement in the right leg returned, the right arm became affected with choreiform tremor, which has remained ever since. At the present time she has general right hemianaesthesia, exactly like that of hysteria. General sensibility is so diminished, that a large pin can be thrust deeply into the face, trunk, and limbs on the right side, without causing any sign of pain. Acuteness of vision is diminished in the right eye; smell is altogether lost on

that side; a watch is heard dimly with the right ear; taste is abolished on the right side of the tongue. There are no motor troubles in the face. The right arm and leg are neither atrophied, contracted, nor in any way deformed. While they are at rest, there is scarcely any motor disorder; but on voluntary movement they present a choreiform agitation like that of insular sclerosis, and somewhat similar to the tremor which occurs in ordinary hemiplegia when the lateral columns of the cord have degenerated and there is not much contraction of the limbs. The movements have no resemblance to those of locomotor ataxy, nor does the fact of the patient's keeping the limbs in view exert any influence over them. On the other hand, they differ from the tremor of sclerosis and that of hemiplegia in existing in the absence of voluntary movement. He applies, therefore, the name chorea to these movements, although it is intended thereby to indicate a similarity only, and by no means a nosographical identity with ordinary chorea.

Post-hemiplegic hemichorea occurs not only after cerebral hemorrhage and softening, as seen in adults, but also after those changes which occur in infants, and are known as partial atrophy of brain (Cotard). There is, as a rule, in these cases, incurable hemiplegia with contraction; but in rare instances the hemiplegia is from the first supplanted by a hemichorea, which lasts for the rest of the patient's life. Charcot reports two such cases, in which, after hemiplegia in infancy, hemichorea without anæsthesia persists to the present time, when the patients are eighteen and twenty-nine years old respectively.

The condition is so uncommon that Charcot has seen only five or six cases in the last twelve years.

Charcot does not at present offer a definite explanation, but he thinks it probable that the substitution of choreiform movement for flaccidity or contraction depends on a difference in the seat of the cerebral lesion. He founds his opinion chiefly on the fact that the hemichorea is usually accompanied by hemianæsthesia. He considers it established that hemianæsthesia, extending to the special senses, is due to a lesion of "(1) The posterior extremity of the optic thalamus; (2) The most posterior part of the caudate nucleus; it is expressly noted that the anterior two-thirds or three-quarters of these nuclei are wholly unaffected; (3) The most posterior part of the base of the corona radiata." He has found ochrey cicatrices in this situation in three cases of unilateral hemianæsthesia; but he admits, on the other hand, that he has seen very many cases in which these nuclei were injured in various parts without there being the least trace of choreiform movements. He does not, therefore, suppose that these organs are necessarily involved, but rather, although he puts it forward as a mere hypothesis, that there are, among the thin fibres of the corona which convey sensory impressions, fasciculi endowed with special motor properties, the alteration of which determines hemichorea.

In connection with post-hemiplegic hemichorea, Charcot describes an inverse affection, which he calls prehemiplegic hemichorea, in which choreiform movements, coming on suddenly after an apoplectic seizure, shortly give place to more or less complete hemiplegia. Hemichorea of this nature is always accompanied by hemianæsthesia. Charcot has seen but three cases of this kind, and in only one has he had a necropsy. In that case there was a blood-clot of the size of a small nut, which distended the posterior part of the optic thalamus.

Hemichorea, accompanied or not by hemianæsthesia, may be produced slowly and progressively without being necessarily preceded or followed by hemiplegia, in consequence of the growth of certain neoplasms in the substance of the hemisphere. In the case of a woman still living, aged sixty, there have been vague pains in the right arm for fifteen years. Six years ago she had epileptiform attacks, and about the same time a choreiform movement began in the right arm. The movement is permanent, increased by voluntary exertion, and resembles chorea more than either paralysis agitans or senile tremor. During the last year this patient has had total right hemianæsthesia, with involvement of the special senses.—*London Med. Record*, March 31, 1875.

15. *Cerebro-Spinal Paresis*.—Dr. J. LOCKHART CLARKE reports (*British Med. Journal*, May 8) the following interesting and instructive case of this:—

A lady, *ætat.* 56, in delicate health, and always subject to debility, with occasional pain in the back, had felt, about a month before I saw her, unusually weak and languid for a few days, and then experienced a severe pain along the spine, accompanied by a sensation as if the spine were stiff, or "as if it were drawn back by a tight cord." She also felt as if her neck were drawn back, but it was not so in reality. The pain along the spine extended to the back of the head, to the shoulders and scapular region, and was accompanied by a sensation of "pins and needles" in the hands and fingers. She complained also of shooting pains all over her head, but particularly on the right side; and, on the same side, she had the most intense pain over the brow, in the temple, and below the eye, along the orbital ridge of the malar bone, extending thence to the inner angle of the eye and side of the nose, and causing frequent fits of sneezing. There was some swelling of the brow and face. The pain in the brow extended upwards to the forehead and vertex of the same side. It was so severe, that she felt "as if it would drive her mad." These symptoms were accompanied by chills, flushes, and perspirations; but there was no continuous pyrexia. The pulse was small and rather quick. Her intellectual faculties became much impaired; she had confusion of mind, loss of memory, and felt so nervous and timid, that she was afraid to move about. In the course of a few days she became very weak, and took to her bed. There was considerable tenderness on pressure at the back of the neck, and at several points along the cervical and dorsal regions of the spinal column. She was ordered citrate of iron and quinia, iodide of potassium, and Dover's powder at night, with counterirritation along the spine. Great improvement followed in a few days, and, at the end of twelve days, all the neuralgic pains had gone, but some tenderness remained along particular parts of the spine. When the neuralgic pains had subsided, she complained of great soreness of almost all parts of her body. The soreness was first felt on each side of her face, on opening and shutting her mouth, and the masseter muscle was tender to the touch. The soreness then extended down to the sides of the neck from behind the ears; then over the shoulders and back of the arms as far as the elbows; next down the back of the thighs and legs, but not in the feet. Her body and face became much emaciated, and the masseter muscles were evidently wasted. By continuing the use of the citrate of iron and quinia, with small doses of tincture of *nux vomica*, she was quite herself again at the end of a month.

16. *Contribution to the History of Cardiac Intermission.*—This is the title of an interesting paper in the *Gazette Hebdomadaire* (Nos. 11 and 13, 1875), by Dr. L. LEREBoullet. The following is a summary of the conclusions of the author:—

1. The best characterized cardiac intermittences; the most painful to the patient; those accompanied with symptoms which indicate that many organs which derive their innervation from the pneumogastrics are affected simultaneously with the heart—are frequently met with when there does not exist any organic lesion of the central organ of the circulation.

2. Cardiac intermittences, which depend upon a primary or secondary alteration of the myocardium, are most frequently indolent; they are almost always accompanied with acceleration of the pulse; they follow arhythmic derangements termed inequalities or irregularities; they are almost always preceded by aborted crystals or *faux pas* of the heart.

3. We may nevertheless, in certain cases—as at the commencement of an endocarditis, or where the organic disease of the heart is not yet revealed by any stethoscopic sign manifesting itself subsequently—observe cessation of the heart beats, which proves that the cardiac plexus at the commencement of organic lesions is much more impressionable than in its physiological state.

4. The symptom of *intermittence* then, in itself and as a means of diagnosis of diseases of the heart, has but small significance, especially if the intermittences are isolated, transitory, and if they may be referred to one of the causes previously enumerated. This symptom acquires a real value only when the intermittences occur with frequency and are joined to symptoms which may lead to a suspicion of lesion of mitral valve.

5. Cardiac intermittence may accompany the most varied pathological conditions. It is not necessarily indicative of general or serious derangement of health.

17. *Condition of the Blood in Recurrent Fever.*—Dr. M. LAPTSCHINSKI has recently had the opportunity, in a well-marked case of recurrent fever, of investigating the conditions of the blood, with a view of discovering the spirillum noticed by Obermeier in patients suffering from this disease. The patient was a young and robust man, in whom the temperature rose on the evening of the fifth day to 105.4° F. After making the most careful examination, Lapschinski was unable to discover any spirilla; but his attention was soon attracted to the extraordinary increase in the number of the white corpuscles, which formed heaps and masses amongst the red, and also to the presence of a large number of peculiar, coarsely-granular, colourless cells, some of which contained fat granules; nearly all exhibited, even without the application of artificial heat, distinct amœboid movements. After the addition of a little acetic acid one or more nuclei made their appearance in the interior of the cells; and around the nuclei were granules. These large, coarsely-granular cells, which had been previously noticed by Ponfick in recurrent fever, he believed proceeded from the spleen. Lapschinski, struck by the extraordinary increase in the number of the white corpuscles, set himself to estimate their number as compared with the red; and although he was unable to determine whether the relative proportions of the white and red were normal before the attack of fever, yet, as the man had been strong and healthy, there was no reason for suspecting that any disproportion had previously existed. The first estimate was made on the eighth day of the fever, after a severe sweating had lowered the temperature 9° F. or more, and the proportion that then existed was 1 colourless corpuscle to 64.3 coloured. On the eleventh day of the fever the proportion had fallen to 1:98. On the thirteenth day it was 1:119.5; and on the fourteenth, when the patient was free from fever, it was 1:138. The very next day, however, it rose to 1:41.2; and then gradually fell till the recovery of the patient had taken place. From these and other observations Lapschinski believes the conclusion may be drawn that each febrile attack in recurrent fever is concurrent with the discharge into the blood current of the contents of the spleen; but whether at the same time pathological products, which perhaps are really the cause of the febrile attacks, are absorbed, as Billroth has suggested, remains to be investigated.

In a subsequent paper Lapschinski states that, after numerous futile efforts, he has at length succeeded in discovering spirilla in the blood of a case of severe recurrent fever, and this in such numbers that the field of a No. 7 Hartnack's objective, with a No. 4 ocular, appeared to be here and there filled with them. Elsewhere they were in such active movement that the red corpuscles were compressed by them and thrown into oscillation. It was the movement of the corpuscles, in fact, which made him suspect the presence of spirilla before he had seen that any were present. Thus there seems to be reason for believing that an explanation of the periodicity of certain fevers, which impresses itself on all subsequent slight febrile attacks from cold or exposure, and which is so difficult to explain upon any ordinary theory, may be found in the fact that such attacks are attended by the development of a vast number of white corpuscles, and perhaps of other products which require a definite time for their formation and action.—*Lancet*, April 24, 1875.

18. *Pythogenic Pneumonia.*—Drs. T. W. GRIMSHAW and J. W. MOORE presented to the Med. Soc. Coll. Phys. (14 April, 1875) a very valuable paper on this subject, which was illustrated by several statistical tables and diagrams. In the introductory portion of the paper the authors stated, that, contrary to what might *a priori* be expected, pneumonia exhibited a tendency to prevail in the warm season of each year. This was shown by a reference to the returns of the Registrar-General for Ireland, the deaths from pneumonia and bronchitis in each quarter of the year being contrasted. An analysis of the returns of deaths from the two diseases in Paris for seven years, showed also a noticeable close correspondence. The object of the present communication

was to endeavour to prove that the remarkable differences which were shown to exist between the percentages of cases of bronchitis and pneumonia at different seasons, do not depend exclusively on meteorological conditions, and further, that the type of summer pneumonia is essentially different from that of winter, or what may be termed true or idiopathic pneumonia. Having given many bibliographical references to instances of pneumonia occurring in connection with bad hygienic conditions, enteric fever, escape of sewer-gas,¹ and during the prevalence of diarrhoea, the authors proceeded to give a clinical description of the affection, illustrated by the full histories of five selected cases, which had occurred under their care. The points of difference in the clinical history of this disease from true pneumonia, appeared to be its extremely sudden invasion, the frequency with which the disease is arrested in its early stage, and its being less liable *constantly* to attack the lower lobe of the right lung. In only one instance was there an opportunity of making a *post-mortem* examination, and the appearances presented were not different from those of ordinary pneumonia in the second stage. The treatment which was found of most value was quinia in five-grain doses every third hour. Alcoholic stimulants and turpentine were employed with benefit in cases where there was much prostration. In the authors' experience, the disease was much more amenable to treatment than the other forms of pneumonia. The paper concluded with an investigation of the meteorological and epidemic conditions of 1874, when pneumonia prevailed so largely in this city. It was shown that a low temperature, a low humidity, and a scanty rainfall, influenced the prevalence of pneumonia. But in answer to the question—"Why does a warm, dry air increase pneumonia?" the authors would answer—"Because the *pythogenic* type of the disease depends on that pollution of the air by miasmata, which is greatest in warm, dry weather." In conclusion, the main points adduced were recapitulated as follows: 1. That the bibliography of pneumonia indicates the existence of a form of the disease which arises under miasmatic influences, and is contagious. 2. That this view is supported by the relations which exist between this form of pneumonia and certain zymotic affections—notably enteric fever and cholera—and by the resemblance between it and epizootic pleuro-pneumonia. 3. That its etiology justifies us in regarding it as a zymotic affection, and in naming it "*pythogenic pneumonia*." 4. That pythogenic pneumonia presents peculiar clinical features, which enable us to distinguish it from ordinary pneumonia. 5. That much of the pneumonia which prevailed in Dublin during 1874 was of this pythogenic character. 6. That, whereas ordinary pneumonia is specially prevalent during a continuance of cold, dry weather with high winds, and extreme variations in temperature, pythogenic pneumonia reaches its maximum during tolerably *warm* weather, accompanied with a dry air, deficient rainfall, hot sun, and rapid evaporation.—*Irish Hospital Gazette*, May 1, 1875, and *Dublin Journ. Medical Science*, May, 1875.

19. *Striped Pneumonia*.—In the *Jahrbuch für Kinderheilkunde und Physikal. Erziehung*, February, Dr. STEFFEN describes, under the term "striped pneumonia," a pathological condition characterized by inflamed condensation of the lung-tissue in the form of stripes. These extend from the spine towards the costal angles, and may traverse only one lobe, or may take such a course as to affect more than one. The various ages at which this form of inflammation occurs are exhibited in a tabulated statement, and allow the conclusion that it is most frequent between the fourth and twelfth month, and diminishes progressively up to the ninth year. These conclusions are founded upon an analysis of ninety-seven cases, of which fifty-four were boys and forty-three girls. It was met with most frequently on both sides of the chest, though, like other forms of pneumonia, it may be more marked on one side than on the other. It is not associated with pleurisy, and thus differs from acute pneumonia in adults. Pathologically, the disease consists of infiltration of lung-tissue with blood, at the same time that there is desquamation of the pulmonary

¹ Vide *Irish Hospital Gazette*, vol. ii. p. 239.

epithelium. It occurs with emphysema and passive congestion, though the affected portions of the lung may be distinguished clearly by their colour from those in the latter condition. Among other complications, peribronchitis, pneumonia, and œdema occur very frequently. Constitutional predisposition and malnutrition are the most common causes which tend to this form of pulmonary disease.—*London Med. Record*, April 7, 1875.

20. *Croup and Diphtheria*.—Dr. WM. CUMMING, of Edinburgh, states (*Brit. Med. Journal*, April 17) that many years ago he saw “a large number of cases of membranous croup, and its characters were of the most pronounced kind.

1. The type was sthenic. 2. The exciting cause was atmospheric, *i. e.*, cold and damp. 3. The treatment most successful in my hands was antiphlogistic, *viz.*, tartar emetic in frequent and nauseating doses. 4. It was non-contagious. I never saw two cases in one family either occurring simultaneously or in immediate succession. 5. It was never followed by paralysis or other consequences affecting the nervous system. 6. It was limited to a certain age; never, in my experience, occurring after twelve years of age. 7. The membrane, as ascertained by *post-mortem* examinations (which were sufficiently frequent), was firm, tough, tense, and of a light kid colour, and was strictly limited to the laryngo-tracheal tract, at least in its upper part, though it not unfrequently passed downwards into the bronchi in the form of plastic bronchitis. The disease never invaded the pharynx, fauces, or nose.

“All who have seen much of diphtheria cannot fail to remark how totally different pronounced cases of it are. 1. The type is asthenic. 2. The exciting cause is septic. 3. The treatment is antiseptic, nourishing, and stimulating. 4. It is markedly contagious, and, unless the most stringent precautions are taken, attacks and proves fatal to other members of the family, or those in direct contact with it. 5. Nervous symptoms, and especially paralysis, are not unfrequent consequences, and are always to be feared. 6. It has no respect for age. 7. The membrane is ash-gray, friable, in many cases almost pultaceous, and generally soft. It is seldom limited to the laryngo-tracheal tract, but as frequently as not extends to the pharynx, fauces, and nose, and often begins there, passing downwards, which membranous croup never does.

“Typhus and typhoid fever are recognized now by sufficiently distinctive characters, but they are, in my opinion, not more, or indeed so distinct, as are membranous croup and diphtheria.”

21. *Diabetes*.—M. ANDRAL has communicated to the Academy of Sciences an analysis of eighty-four cases, of which he has preserved written accounts, discarding all others which he has trusted only to memory.

Of these 84 cases, 2 at the period of observation were between the ages of three and five, 3 between ten and twenty, 12 between twenty and thirty, 20 between thirty and forty, 20 between forty and fifty, 13 between fifty and sixty, 12 between sixty and seventy, 1 at seventy-three, and 1 at seventy-eight. Thus, glucosuria, very rare prior to twenty, becomes less so between twenty and thirty, is at its maximum between forty and fifty, and continues to be often met with between fifty and seventy, after which it becomes quite exceptional; that is, the greatest frequency of the disease coincides with the epoch at which the organic forces are in greatest activity. But the ages thus specified were not those at which the diabetes first made its appearance—which were in 12 before thirty, in 40 between thirty and sixty, and in 8 between sixty and eighty. There were 52 males to 32 females.

Several of the these cases exhibited the influence of the nervous system in producing or aggravating the disease. Thus, under some moral emotion the quantity of sugar would become augmented in the course of the twenty-four hours from twenty grammes to ninety-six grammes per litre; and in some very rare cases the first manifestation of diabetes followed closely upon the operation of such cause. One woman became diabetic after having inspired so large a quantity of ether during several months that she was often in a kind of intoxication; and in another the diabetes followed disturbances of the sensibility, which exhibited themselves in the forms of partial anæsthesia and multiple neuralgias.

One man was epileptic and another paraplegic before becoming diabetic. In two cases a traumatic lesion preceded the glucosuria, the lower part of the occiput in one case and the nucha in the other being the seat of injury. In three cases there was paralysis of the upper limbs without any alteration in the sensibility.

M. Andral has been able to trace the diabetes to defective nutrition in but very few cases, and he observed that "during the many years that I have attended persons of all classes of society in and out of hospitals, I have met with a larger number of cases among the well-to-do than among the poor. Now, the food constitutes one of the differences between these two classes, being often insufficient and in great part vegetable in the latter, and in the other proportioned to the wants of the economy, and often exceeding these, and in great part animal in its nature. I have also found more than once that persons, before they became diabetic, were remarkable on account of the strength of their constitution, some of them having much *embonpoint*. Whatever, then, may be the intimate disturbance which induces—first in the blood, and consecutively in the urine—an excess of sugar, it would seem, in more than one case at least, that this hyperglycæmia and this glucosuria, so far from representing a diminution of nutritive activity, may manifest an exaggeration of this. This idea, which is Prof. Claude Bernard's, is supported by another remarkable fact—viz., the disappearance of the sugar from the urine in the last stage of the existence of diabetic persons, as I have been able to assure myself more than once."

Other disturbances than that of the nervous system may precede diabetes; and thus, although in most of the 84 cases the diabetes manifested itself in the midst of good health, yet in 3 subjects it had been preceded by dyspepsia, in 8 by phthisis, in 5 by asthma, in 3 by organic disease of the heart, in 2 by nephritic colic, in 3 by typhoid fever, and in 1 by cholera. When diabetes becomes complicated by another disease, it may temporarily disappear, as was the case with a man as long as he was suffering from febrile angina, and with a woman the subject of severe dysentery. Was the cause here the modification of the nutritive action during fever, or the suspension of alimentation?

As is well known, the urine is of greater density in diabetes than in any other disease. Whenever it contained more than twenty grammes per litre, the areometer has always marked more than 1030, standing in a great number of cases between 1032 and 1038, and often between this last figure and 1042. In fewer cases it has been between 1042 and 1045, and once it marked 1047—the maximum observed. As the result of comparative observations, it may be concluded that wherever it is of higher density than 1036, glucosuria exists. The amount of sugar in the eighty-four cases has varied from 6 to 100 grammes per litre; and as these patients discharge several litres in the twenty-four hours (in one of them 480 grammes of sugar, in another 720, and in a third 800 grammes were so expelled), it is evident that, in such cases as these, it cannot be only feculent alimentary substances that furnish such an amount of glucose. Moreover, successions of analyses have shown that, irrespective of the influence of all treatment, the quantity of sugar may greatly vary at closely approaching epochs, and that it may alternately disappear and return. It is under this last circumstance especially that it comes to pass that glucosuria may persist for a great number of years without serious damage to the health, while in other cases diabetes runs almost the course of an acute disease. M. Andral has known it prove fatal in scarcely five weeks after its first appearance.

The general circulation, except when complications existed, has not been notably disturbed, the pulse generally ranging from 60 to 80, and never having been less than 56. But, on the other hand, the capillary circulation has often suffered, as exhibited in red and swollen gums, injected conjunctivæ, erythematous patches of the skin, and passive congestion of the lungs—a frequent cause of death in diabetes. Can I venture to attribute all these congestions to the sort of difficulty which the blood, loaded with sugar, may find in traversing the capillaries, or do they depend upon defective action of the vaso-motor nerves? And, after all, are they other than hypotheses, these expressions of too thick or too fluid blood, by which formerly so many morbid conditions

were too easily explained without sufficient proof? And if I put the question, it is because it seems to me accessible to the combined researches of clinical medicine, experimental physiology, and chemistry. And if an affirmative conclusion be determined upon, we must arrive at this conclusion: that there is an order of hyperæmias which finds its explanation in the blood itself."

In the diabetic subjects upon whom autopsies have been performed, most marked congestion of the liver and kidney has always been found, which M. Andral regards as a consecutive result of the excessive functional activity of these organs. Two other facts, which have been also observed in most of the cases, have much struck him. One of these was a singular induration of the spleen, its parenchyma being so dried up that not a drop of liquid followed incision and pressure. The other was the appearance of commencing tubercular granulations in the pulmonary parenchyma, their slight development probably indicating that they had been developed subsequently to the glucosuria, under the influence of the debility consequent on this.

The treatment generally followed in these eighty-four cases consisted in the use of alkaline drinks and in alimentary regimen composed chiefly but not exclusively of animal substances, to which were added some herbaceous vegetables and ordinary bread. During this treatment the sugar disappeared not to return again in only five cases. In some others it also disappeared but to return again; while in others it remained as abundant as before, or even increased. In these last cases an exclusively animal regimen, unaccompanied by any feculents whatever, was rigidly enforced, and yet the sugar continued to appear. Moreover, this regimen cannot be continued indefinitely, for after a time the patient becomes so disgusted with it, that, whether we will or not, we must give it up.

M. Andral terminates his paper with some considerations as to how far his clinical experience corroborates the theory of diabetes founded by M. Claude Bernard on the results of experiments. He is of opinion that this is the case only to a very limited extent.—*Med. Times and Gaz.*, April 24, 1875.

22. *Cirrhosis of the Liver in Children.*—The rarity of cirrhosis of the liver in children makes it extremely important that every case should be thoroughly investigated, in the hope that we may some day arrive at the true etiology of an affection whose origin, when it occurs in early life, is involved in so much obscurity. In the *Progrès Médical* of March 20, Dr. J. CAZALIS has reported two such cases, which occurred in the Hôpital Sainte Eugénie, at Paris, under his observation. Both the patients were girls, one aged seven and the other nine years, and both were admitted into the hospital with ascites, slight œdema of the lower extremities, and considerable dilatation of the abdominal veins.

In one case the abdominal swelling was of two months', and in the other of about a fortnight's duration, but there had been a condition of indifferent health in both for an indefinite period. In one case there was albumen in the urine on admission into the hospital, and in the other slight icterus, but in neither was there any cardiac disease whatever. Both children had acute attacks of peritoneal inflammation while under treatment, accompanied with severe abdominal pains, dyspnoea, and high fever, and the younger child had slight pneumonia as well. On the subsidence of the fever the ascites in both cases made rapid progress, and tapping had to be ultimately performed, but without success, as death soon resulted—in one child from pneumonia, erysipelas about the seat of puncture, and gangrene of the vulva; and in the other case from subsequent peritonitis. The necropsy in both cases revealed extreme atrophy of the liver, which in the elder girl scarcely reached the size of the fist of an adult. The surface was finely lobulated, the capsule thickened, and the section resembled in all respects that of an ordinary gin-drinker's liver. In both cases the spleen was large, but in the elder child it was much hypertrophied, and could be felt during life, after the abdomen had been tapped, occupying the left hypochondrium and flank, and extending almost into the epigastric region.

It was not possible to obtain exact details of all the circumstances connected with the illness of the younger child, but it appears certain that she was in perfect health when she came into Paris from Sein-et-Marne at the approach

of the German army in 1870, and that she fell ill soon afterwards from the cold and hunger which she suffered during the ensuing siege. In the case of the elder girl, although every possible information was readily given by the parents, Dr. Cazalis was unable to trace back the commencement of the disease to any definite cause. Her history was as follows: "At three years old she had measles, and since then had often complained of her stomach. Since the age of six she had suffered from frequent epistaxis on the least excitement. At seven years she had what the doctor in attendance called mucous (? typhoid) fever, and from that time her belly began to enlarge, though not to a marked degree. She suffered from indigestion, frequent diarrhœa, and occasional slight tenesmus. In April, 1869, she had jaundice, which lasted two months, and during that period the belly got still larger. Still she seemed to her parents only to be in a poor state of health, and the attack which led to her admission into the hospital was, according to their view, the onset of a new disease." The general condition of the parents themselves was satisfactory. The father only suffered from occasional attacks of rheumatism, and the mother's health was excellent. Their habits were temperate, and not the slightest evidence of a syphilitic taint could be discovered by the most careful questioning, or by an actual physical examination of either parent. Moreover, the appearance of the child's liver did not in the least correspond with the descriptions of the state of that organ in the syphilitic hepatitis of children. The girl had never had intermittent fever, but Dr. Cazalis lays great stress on the fact that she had lived most of her life in a damp basement; and, coupling this with the apparent origin of the disease in the younger child in exposure to cold and damp and privation, and with a case of Frerichs's, where, among other symptoms, cirrhosis of the liver developed in a child of ten after a prolonged immersion in a cold bath, he considers that damp cold may be an important element in the development of cirrhosis in children. However this may be, it seems perfectly clear that cirrhosis of the liver occurs in early life entirely independently of heart disease, syphilis, or the abuse of stimulants; and this negative evidence is extremely valuable.—*Med. Times and Gazette*, May 1, 1875.

23. *Urine in Cholera*.—Dr. CHEVERS states (*Indian Med. Gazette*, April, 1875) that with the aid of his house-physician he has made an extended series of "observations upon the *specific gravity* of cholera urine, which, with an interruption of twenty months, has been continued until now. The general result of these very numerous observations is that the first urine usually owes its high colour chiefly to the presence of bile pigment; blood has not been detected; the fluid is turbid. *The specific gravity is generally high, from 1020 to 1026*, the reaction is generally acid, there is commonly a sediment of epithelium desquamated from the renal tubes, albumen is probably always present, most frequently in small quantity. Such urine may be passed (the catheter has to be used once or twice in many cases) twice or thrice, generally with a high, but reduced sp. gr., as 1019. The case advancing in progress to another very distinct stage, the flow of urine is more free, the fluid is usually transparent and pale, and *the specific gravity is low, from 1012 even down to 1002*. Bile pigment is generally present, and may frequently be detected up to the time of the patient's discharge. It usually out-stays the albumen. When the case does well, the albumen usually disappears in from one to three days, but Dr. Chevers has found it as late as the twelfth day. Renal epithelium has been noticed as late as the thirteenth day. During tardy convalescence phosphates often appear in the urine.

Whenever, in cholera, there are albumen and bile pigment in urine of a very low specific gravity, what is now generally called uræmia, or as it appears more correct to term it, cholo-uræmia, is to be apprehended and resisted.

Dr. C. makes some judicious remarks on the treatment of cholo-uræmia. When the renal and hepatic tissues have been previously healthy, the uræmia and cholæmia of cholera are attributable, first, to congestion of the kidneys and liver, and, secondly, to lack of fluid in the system. Cholo-uræmia can be best guarded against by the use of large and repeated sinapisms over the liver and kidneys, by dry cupping over the kidneys; the steady application of a

pillow-case, half-filled with hot dry bran (*bhoosee*) in which the patient lies; large hot linseed meal or *soojee* cataplasms to follow the sinapisms over the liver and loins, and the free use of *nature's own diuretics*, water and milk. Dr. Goodeve says "water is the best diuretic." After cholera I have never dared to irritate the kidneys by more stimulating direct diuretics. These organs can, at this most critical period, only be *solicited* by the use of bland demulcent fluids, supplying the place of that which the cholera flux has almost completely drained the system of. Attempts to *compel* them to act can only tend to produce arterial congestion and uræmia.

24. *Treatment in extremis of Cases of Fibrinous Separation in the Heart and Large Vessels.*—Dr. RICHARDSON read before the Medical Society of London (April 19th) a report of a further research on this subject, being a continuation of one read before the Society in 1872. The details of four cases were then related, in which the author had administered ammonia in large doses, for the purpose of causing resolution of fibrine in the right side of the heart or in the great vessels. In three of the cases the treatment was successful, but the fourth had a fatal termination, the patient dying from cerebral effusion. After a minute relation of these examples of disease, Dr. Richardson passed to the practical lessons suggested by them. He described the diagnosis of obstruction in the right side of the heart, considering—(a) the characteristic dyspnoea with open air-passages; (b) the fulness of the veins of the neck; (c) the feeble pulse, with the tumultuous and sometimes forcible stroke of the heart; (d) the diminished quality of the first sound of the heart; (e) the differentiation in the action of the tricuspid and mitral valves in respect to the first sound, a suppressed sound, not a murmur, being defined as the true physical indication of the presence of the coagulum. In connection with the question of diagnosis, the author showed that a series of hysterical symptoms might in some persons so closely imitate the symptoms of obstruction that it was most difficult at first to distinguish between them and the true affection, the spurious symptoms, however, being recognizable from the actual by the physical signs to a certain extent; but that which proved them most certainly to be spurious was the rapidity with which, under any or no treatment, they passed away. The subject of treatment was then commented on. Together with the persistent administration of ammonia until the whole volume of the blood is under the influence of the alkali, absolute rest of the body in the horizontal position was most urgently enforced; the diet insisted on was milk chiefly, with avoidance of solid food and of alcoholic stimulants in every form; the employment of solutions, of opium especially, was forbidden. The *modus operandi* of the ammonia treatment was entered into at some length. The remedy was not given, the author said, as a stimulant, neither was it administered for the purpose of reducing febrile heat, though it might materially assist in this latter intention, but it was given to act as a solvent on the blood, and to prevent putrefactive changes; in illustration of which action a specimen of blood was shown which was still fresh and still fluid, although it had been kept over six months, having been kept in this state by the presence of ammonia. Dr. Richardson terminated his paper by saying that if he had suggested a plan of treatment which in one case out of four should save the patient, he should feel happy in the consciousness of having essayed a good work.—*Lancet*, May 1, 1875.

25. *Sweating of Chronic Phthisis.*—Prof. JAMES LITTLE states (*Dublin Journ. Med. Sci.*, January, 1875) that he has satisfied himself that five grains of Dover's powder administered at bedtime, "checks phthical sweating more frequently than any other remedy. Next to it is atropia, or its sulphate. It is best given in pill, $\frac{1}{10}$ grain to $\frac{3}{8}$ grain. As this requires very careful compounding, it is sometimes safer to use the liquor atropiæ—one minim to one minim and a half; but, whether from the instability of the solution or some other cause, the atropia does not display its power over sweating so markedly when given in solution as when administered in pill. The chill caused by the damp night-dress is not only a great discomfort to the phthical, but is, I believe,

a not uncommon cause of the intercurrent pulmonary congestion to which they are so subject; and all consumptives who sweat should, therefore, wear a large, loose night-dress made of fine flannel."

26. *Tar in Bronchial Catarrh and Winter Cough.*—Dr. SIDNEY RINGER and Mr. WM. MURRILL state (*Brit. Med. Journ.*, March 20, 1875) that the frequent and popular use of this remedy has induced them to try its effects. "Patients," they say, "so susceptible to cold that they were obliged to remain indoors the whole winter, informed us that this remedy curtailed considerably the duration and lessened the severity of their catarrhal attacks, and that, by an occasional recourse to the tar, they became less prone to catch cold, and could more freely expose themselves to the weather without incurring an attack.

"We employed it in two-grain doses, made into a pill, every three or four hours. From October to January inclusive, we carefully watched its effects on twenty-five patients whose ages varied from 34 to 70, the average being 44. All these patients had suffered for several years from winter-cough, lasting the whole winter. They were out-patients, and visited the hospital weekly, or oftener. Most of them were much exposed to the weather, whilst some were so ill that they were obliged to stop work, and, therefore, were less exposed.

"These patients suffered from the symptoms common in winter-cough—paroxysmal and violent cough, the paroxysms lasting from two to ten minutes, and recurring ten to twelve times a day, and, in the night, breaking their rest. The expectoration, frothy and slightly purulent, was generally rather abundant, amounting in some cases to half a pint or more in the day. The breathing was very short on exertion, but most could lie down at night without propping. The physical signs showed a variable amount of emphysema, with sonorous and sibillant rhonchus, and occasionally a little bubbling rhonchus at the base.

"These patients usually begin to improve from the fourth to the seventh day; the improvement rapidly increased, and, in about three weeks, they were well enough to be discharged. The improvement was so decided that the patients returned to their work, even those who in previous years had been confined to the house the whole winter. The cough and expectoration improved before the breathing. In several cases the expectoration increased during the first three or four days, but its expulsion became easier, and, with the improvement in the cough and expectoration, appetite and strength returned.

"On discontinuing the tar a relapse often occurred in a week or two, and the patient returned with a request for more of the same medicine, and then, a second time, the symptoms quickly subsided. We found it useless in bronchial asthma, and its effects were more evident in cases where expectoration and cough were more marked than dyspnoea.

"We have no doubt that tar is a good, useful, though, perhaps, not a striking, remedy in these troublesome affections, and certainly it is more efficacious than the drugs generally employed.

"It may be remarked that tar is useful in the same cases for which the spray of ipecacuanha wine is serviceable. The spray, we find, acts much more quickly, and, unlike tar, it lessens dyspnoea even before it improves cough or diminishes expectoration."

27. *Transfusion.*—Dr. C. A. EWALD writes to the *Irish Hospital Gazette* (May 15, 1875), that in Berlin the operation of transfusion "has lately become very general, which is due in a great measure to the interest excited by the publications of Dr. Hasse, of Nordhausen. Once the symptoms point to the necessity for the artificial supply of fresh blood, the only questions to be determined are, first, must the blood used be taken from an animal belonging to the same species or not; and further, whether the blood injected should be defibrinated or not? This latter question is to some extent settled; for we know that the fibrin is unnecessary for the purpose of improving degenerated blood, and, therefore, that defibrinated or undefibrinated blood is equally efficacious. For it is an established fact that the red blood corpuscles are not in any way injured by the process of defibrination; and we know that the process

of oxidation, and through it, probably, all the chief effects that we expect from the blood transfused, is carried on by means of the red corpuscles. Therefore, until it can be shown that defibrinated blood is wanting in some necessary and important constituent, or that defibrination predisposes to some special accident, so long does there seem to me to be no ground for discarding a method which has the great advantage of being so quickly and readily carried out. I would myself, therefore, always use defibrinated blood in preference to unde-fibrinated; for the former can at all events do no harm, while the advantages of the latter are, to say the least, questionable, and it may under certain circumstances prove eminently injurious, from the coagulation of the fibrin and the formation of thrombi or emboli.

"The question as to the practicability of using the blood of an animal belonging to a different species, has lately been to some extent determined by Landois (*Centralblatt*, 1874, No. 27) and Ponfick (*Virchow's Archiv*, vol. 62), who have shown that the moment the amount of such blood exceeds a small and fixed quantity, unfavourable symptoms will under all circumstances develop themselves. Ponfick discovered the presence of free hæmoglobin in the blood plasma in these cases, and as a natural consequence in the various organs and their secretions. He draws attention to the anomalous presence of this substance which is never found in normal blood, in the blood plasma, and, considering that the function of the kidneys is to get rid of such a substance, he concludes that the deleterious effects of such transfusions are caused by the inability of these organs to perform the extra work thus imposed upon them. That the kidneys are hereby seriously inflamed is proved, by finding after death a copious exudation of plasma into the lumina of the uriniferous tubules, which at once causes an insufficient amount of urine to be secreted. Death takes place, just as it does in cases of uræmia, from suppression of urine, the symptoms being in both cases similar. The success which Dr. Hasse, who always transfuses lamb's blood, professes to have obtained is not above question, and the results obtained by other operators, as for instance Birsch-Hirschfeld and Ries, have not come up to the expectations which a perusal of Dr. Hasse's publications is calculated to awaken. In three cases in which I have lately been called upon to perform the operation, I used defibrinated human blood. The ordinary operation was performed twice for excessive anæmia (Pseudo-leukæmia) and once in a case of poisoning with carbonic oxide. In one of the cases of anæmia and in the case of poisoning with carbonic oxide, the operation was quickly followed by the patient's recovery. The other case of anæmia, which occurred in a young man aged 27, proved fatal five hours after the operation, with all the symptoms which usually accompany death after the transfusion of animal blood. None of the patients complained during the operation either of violent stitch or pain in the back, which is a constant symptom when animal blood is used. In all three the temperature rose during the two hours following the operation to 104°-104°·9 Fahr., and then sank quickly to normal. There were no further symptoms. The blood transfused was on each occasion obtained from patients who were suffering from some slight bronchial affection. Immediately after the operation, the patient who as above mentioned afterwards died, felt quite well, and, like the other two, his pulse was stronger and fuller than it had been previously, and his breathing, which had been somewhat hurried before the operation, became quieter. During the third hour after the operation he began to complain of want of breath and became very restless, tossing himself about in bed, and died quite suddenly without presenting any very special symptoms.

"The urine that was found in the bladder was the colour of blood, and contained some cylinder-shaped bodies which were composed of a finely granular, yellowish-red mass, which contained, however, no red blood corpuscles, but on which the usual hæmoglobin markings were plainly visible.

"At the *post mortem*, the heart was found slightly hypertrophied and fatty. The spleen was slightly enlarged; there was extravasation of blood beneath the serous membranes, especially the pericardium and pleura. Neither macroscopically nor microscopically could any alteration be detected in the vessels. The kidneys were large and unusually pale. Under the microscope the epi-

thelium of the straight tubes appeared dull. Here and there at the junction of the straight and convoluted tubes, broad cylindrical bodies were found which correspond exactly with those in the urine. All this agrees accurately with the *post-mortem* appearances described by Ponfick and Landois as occurring in cases that proved fatal after the transfusion of animal blood. I have not quite made up my mind as to what were the conditions in this case that led to the fatal termination. It seems, indeed, probable that there was, if I may be allowed to use the expression, a sort of morbid predisposition of the whole circulating system and its contents. From the state of fatty degeneration in which the heart was found, it is plain that there must have been some interference with the nutrition of the vessels, and a considerable change in the constitution of the blood. Now, why should not blood whose chemical and morphological elements have undergone such a change bear the same contrast with healthy blood, as it has been found by experiment that lamb's blood does with dog's blood? It will be very hard to determine in successful cases what influence the transfusion has had, or if indeed it has had any. But the operation itself is so simple, and its good effect so notorious, that it certainly deserves to be performed oftener than it is. In the case of leukaemia that I transfused successfully, the operation had a marked influence on the constitution of the blood. For a drop of blood obtained before the operation by pricking the finger, appeared of light blood-red colour and watery; while a drop obtained in a similar manner after the operation had a florid red colour, and seemed thicker. Both before and after the operation the red blood corpuscles presented a peculiar pale and glistening appearance, and their number was not perceptibly increased by the operation. I may further remark that eight cases in the Augusta Hospital, in which Dr. Kuster lately performed transfusion with lamb's blood, all turned out unsuccessful. These eight cases all died, and in none of them was the good effect of the operation perceptible for more than from ten to fourteen days. In one case the operation was probably the immediate cause of an attack of hæmoptysis, and in another it was followed by protracted fever. All the patients complained during the operation of violent pain in the back and great difficulty in breathing. From half an hour to an hour after the operation they were seized with a rigor, followed by a rise in temperature, which was again dissipated in from five to six hours. It is only fair to mention that all these patients were suffering at the time of the operation from some severe surgical injury."

28. *Nervous Headache and its Treatment*.—M. HERVEZ DE CHÉGOIN, in the *Union Médicale* for October, 1874, after having verified the dilatation of the arterial vessels of the encephalon and the face during attacks of nervous headache, considers it as an arterial neurosis. Its starting-point is in the great sympathetic, its precise seat in the nervous filaments which accompany the arteries. Its material phenomena are seen in the dilatation of these vessels, and in the compression it produces on the brain and the other organs; for, in a true fit of intense nervous headache, patients suffer universally, the hands are swollen, the muscles painful, and movements of the joints distressing.

M. Hervez de Chégoïn concludes from these facts that the treatment should be directed against the distress of the nervous system of the great sympathetic, and against the resulting arterial dilatation which in his view constitutes the essential characteristic of the disorder, in which it is necessary to distinguish three things, the intermittent character, the pain, and the arterial dilatation. A special therapeutic treatment, founded on the rigorous appreciation of and reasoned out from these elements of the disease, leads to the good results which have been obtained by the administration of pills composed as follows:—

Sulphate of quinia, tannin, each 5 centigrammes (0.75 grain), aconitia 1 milligramme (0.015 grain) for one pill. One of these pills is given during the day; but some patients, having of their own accord exceeded this dose, take as many as three or four of them daily, with marked benefit. Tannin, in particular, seems to have a special action, which explains the relief obtained by the use of certain substances, which, like Paullinia, contain it. This treatment, however, is incomplete, since it does not touch the intermittence nor the pain;

these are met by substances contained in the pills for which the formula is given above.—*Lond. Med. Record*, March 31, 1875.

29. *Alcohol and Digitalis in Typhus Fever*.—Dr. H. M. JONES, in an account (*Dublin Journ. Med. Sci.*, April, 1874) of the typhus fever treated in 1873-74 at the Cork Fever Hospital, makes some interesting remarks on the administration of alcohol and digitalis in that disease.

He stated that he has been gradually relinquishing the use of alcohol in fever. "In June, 1873, I treated," he says, "the first case of severe maculated typhus (which I then thought I had the temerity to treat) without stimulants, and by means of digitalis. Since then I have gradually been diminishing the use of stimulants, until of late I administer them as the rare exception in typhoid, and in a limited class of patients in typhus." It appears from his statistics that the mortality was reduced to 8 per cent.

Dr. J. records the opinion he has formed of the use of digitalis in fever from its administration in a large number of cases. "That digitalis has the power of steadying the pulse, rendering it firmer and less compressible, has been for some time known, its dangerous effects only becoming manifest when it is pushed too far, or toxic doses administered. Then the arterial pressure falls, and the pulse passes from the slow and steady to the rapid and weak. It is clear that in typhus the inhibitory action of the vagus must be lessened; so also the rhythmical power of the cardiac ganglia is interfered with. This is shown by the rapid and weak action, by the character of the pulse; there is a diminished arterial pressure and tension. Dr. Grimshaw, of Dublin, drew attention to this fact, in connection with the action of digitalis, so far back as the year 1867. As it is universally agreed that digitalis possesses, in therapeutic doses, the property of exciting the inhibitory action of the vagus, and of increasing the arterial pressure, we might naturally assume that, in such a disease as typhus, with its quick compressible pulse, it would be indicated; but, again, it appears to me that the result to be desired from the administration of a drug in typhus would be the consequent diminution of the internal work done; a conservatism of force and prevention of waste. I cannot reconcile increased action of the circulatory and respiratory organs in consequence of an abnormal stimulation without a correlative manifestation in an evolution of heat, and I take it that, in many cases of fever, in which the temperature, towards its termination, is gradually lowered to a dangerous degree, or suddenly falls, it is because not only has the natural body-heat been expended, but its latent reserve fund has been encroached on, its force, represented as heat, is exhausted, and there is no power in the system to elicit it. To enable the body, with the least expenditure of force, to tide over its period of extra work, to modify and restrain the general process of combustion, which is taking place in excess, must be our object. In fever the question is—does digitalis assist us to do this? I believe it does. . . I have given digitalis, *watching carefully its effects on the temperature*, in over two hundred cases of acute disease—simple fever, typhus, typhoid, pneumonia, pleuro-pneumonia, delirium tremens, remittent fever, etc., by itself or combined, and I have no doubt of its antipyretic properties. That these will be manifested suddenly, or follow immediately on its use, or that they will be apparent in every instance of the administration of the drug (no more than the effects of any other medicine, when given in moderate doses, invariably follow) is not to be expected. On the contrary, its mode of action is subject to great variations in this respect, in different patients, and often in the same patient. A glance at the daily range of the temperature in the annexed cases, in which digitalis was administered in typhus, will show this. I would say that its antipyretic action, as shown by a characteristic fall, in many cases, is uncertain, or there may be an unaccountable rise during its administration, and a corresponding fall subsequently. Yet that it influences the temperature, in some cases rapidly, in others slowly, is, to my mind, beyond a doubt. I would not expect, from what we know of the physiological action of digitalis, a very marked and decided fall in temperature, though I have frequently seen this, and at periods not connected with defervescence; what I would rather hope would be a restraining power, a limiting of the range, a gradual, but marked

fall, and this is exactly, in the majority of cases, what clinical experience has shown me is the case. Any one who compares a number of charts of cases in which such an antipyretic as quinia or nitrate of potash (in large doses) has been given, with those in which digitalis has been used, will at once be struck with the difference in their action—the marked dip in the one and sudden fall, with corresponding diminution of pulse-beats, the gradual decline of the other, with an equally slow reduction of the pulse.”

The following are Dr. Jones's conclusions: “1. That in the treatment of fever, typhus and other forms, too much reliance has been placed on *alcoholic* stimulants, and that fashion, rather than reason, has swayed many in their *indiscriminate* employment.

“2. That the percentage of cases requiring such stimulants is a low one; and that while our administration of them, as regards quantity and kind, must depend entirely on the condition of the *patient*, still the utmost caution (with our present knowledge of their physiological action) is required.

“3. That in digitalis we have a powerful cardiac stimulant, which, while it gives force to the heart, does not do so at the expense of the system, but rather is a conservative agent, which controls expenditure and limits waste of vital action—always, of course, remembering that a large number of cases will recover without any specific treatment, save that care and guidance which provides for the wants of the system, and secures the patient from the risks of complications. That digitalis appears to be indicated in the early periods of many cases of typhus in which we have a rapid pulse and high temperature range, regulating our administration by its effects on both, using it, rather, with the object of guiding the patient up to a certain point, than of curing the disease.”

30. *Lavements of Cold Water in Typhoid Fever.*—Dr. FOLTZ, of Lyons, advocates lavements of cold water in typhoid fever. After numerous observations he concludes, that such lavements have both a local and a general action; the local action being an agreeable sensation of coolness, accompanied with intestinal contractions; and the general action producing slackening of the pulse rate and notable diminution of temperature, as well as calming the nervous system, decreasing thirst, exciting appetite, and increasing the secretions. This refreshing sedative and tonic action follows in all instances in which the temperature of the lavement is under 38° C. (100° F.), but is more intense and durable according to decrease of temperature and frequency of repetition. The therapeutic indications for such lavements are very numerous. Their local action renders them useful in abdominal affections, and their general action in febrile maladies. Both these actions render their use applicable in typhoid fever.—*Irish Hospital Gazette*, April 15, 1875, from *Lyon Médical*.

31. *Treatment of Intestinal Hemorrhage in Typhoid Fever by Arterial Transfusion.*—Prof. MOSLER, of Griefswald, publishes a remarkable case, in which transfusion of blood into the radial artery of a woman dying from intestinal hemorrhage in typhoid fever proved immediately successful (*Berliner Klinische Wochenschrift*, May 17). The patient, who was thirty-seven years old, lost so much blood by the bowel that she lay for a whole night pulseless and unconscious. Professor Hütter performed the operation of transfusion, the blood being taken from the vein of a strong healthy man, and injected, after defibrination, into the radial artery. The hand and the arm immediately became red and fuller, and the cardiac impulse more distinct, and the pulse returned at the other wrist. Half an hour after, there was a most severe rigor, but this was successfully treated, and the patient recovered perfectly in due course. This is the fourth occasion on which transfusion is known to have been performed in the hemorrhage of typhoid fever; one only of the three previous cases was successful. Professor Mosler was careful to practise transfusion into an artery instead of a vein, in order to avoid the risk of distending the right ventricle, which was excessively weak, and might have been instantaneously paralyzed, as has been observed in at least one previous instance. He also insists upon the imperative necessity of employing the blood of man,

and not of animals, the latter having been abundantly proved by the observations and experiments of Landois to be highly dangerous.—*Med. Times and Gaz.*, May 29, 1875.

32. *Mumps—Metastasis to Testicles—successfully treated by Jaborandi.*—Dr. CZERNICKI reports (*Gazette Hebdom. de Méd. et de Chirurgie*, No. 14, 1875) a case of orchitis consequent on metastasis of mumps, which he successfully treated by the administration of jaborandi, thus utilizing the sialagogue properties of that plant to divert the metastasis by increasing the functional activity of the salivary glands.

Surgeon Major EMERY-DESBROUSSES records in the same journal (No. 18, April 30, 1875) an entirely similar case successfully treated by the same remedy.

33. *Ascites; Paracentesis; Recovery.*—Dr. W. ALLEN JAMIESON records (*Ed. Med. Journ.*, April, 1875) a case of ascites in which paracentesis was performed 133 times between April, 1870, and September, 1874. Since the last period there has been no accumulation of fluid, and the general health of the patient has been excellent.

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

34. *Excessive and Long-maintained High Temperature after Injury to the Spine.*—Mr. J. W. TEALE communicated to the Clinical Society of London a unique case of this. The temperature ranged from 108° to 122° and upwards for a period of nearly nine weeks. The patient recovered. A full abstract of the report of this case is to be found in the July number of the *Monthly Abstract of Medical Science*.

35. *Transplantation of Bone.*—NUSSBAUM described a novel mode of transplantation of bone at a surgical conference at Munich, in which he discussed certain forms of non-union after fractures, with special reference to what is known as pseudarthrosis, and the treatment applicable under such conditions. If, after the loss of a considerable quantity of bone, the fragments are widely separated and possess only a ligamentous union, he suggests that a piece of bone be transplanted from one of the fragments to supply the deficiency, and he has accomplished this in one case with a successful result. This was in an officer who had sustained an extensive comminuted fracture of the ulna from a gunshot injury, which, after necrosis and separation of the small pieces, had healed, leaving a false joint with the ends of the fragments two inches apart, and united only by a slender ligamentous band. Although the radius was unbroken, there was considerable unnatural mobility and great impairment of the usefulness of the arm. In performing the operation the seat of fracture was first exposed, and then after removing the intervening fibrous band, a piece of bone two inches long and involving half the thickness of the ulna was separated from the upper fragment by means of the saw and chisel, so that it was left adhering only to the tip by means of a narrow bridge of periosteum; it was then brought down so as to occupy the interval between the fragments, sutures were placed in the wound, and the limb was supported in a plaster-of-Paris splint with a window. All went on well after the operation; the wound closed in the course of a few weeks after the separation of a minute sequestrum, which only amounted to about one-tenth of the transplanted portion. "The piece of bone which had been transplanted had united, and could be distinctly felt," and, after a while, "the firmness of the now uninterrupted ulna was clearly established." After six months the use of the arm had so far returned that the patient was pronounced fit for service. At the end of his communication the author discusses the various operations for rectifying angular union, and he recom-

mends one founded on that performed by Langenbeck with a small saw. After making a short incision at the seat of fracture, the bone is divided for three-quarters of its thickness with a small chisel, and when the external wound has healed the remaining piece of bone is completely broken through. The advantage of the chisel over the saw consists in the fact that it does not, like the latter, leave sawdust in the wound.—*Med. Times and Gazette*, April 24, 1875, from *Centralblatt für Chirurgie*, April 10, 1875.

36. *Injuries to the Head*.—Mr. JON. HUTCHINSON, in a clinical lecture on osteitis, necrosis, and pyæmia, points out the dangers of laceration of the scalp, especially if accompanied by detachment of the pericranium. These dangers consist in the occurrence of suppuration between the bone and the internal periosteum, to be followed in its turn by inflammation of the arachnoid membrane; and, secondly, in the choking with coagula and the products of inflammation of the gangrenous veins of the diplœ of the dying fragment, which may extend to the sinuses and cause pyæmia. He states that some of the most typical cases of pyæmia are induced by the death of a very small area of bone. In cases of simple death of the bone, a period of from ten days to a fortnight usually elapses before there are any symptoms of blood disturbance. He arrives at the practical conclusion that in cases in which the propriety of primary trephining is debated, the surgeon may put wholly aside any fears as to increased risk of pyæmia after that procedure, and may adopt it or not as the other circumstances of the case may indicate.—*Practitioner*, April, 1875, from *Med. Times and Gazette*, Feb. 27, 1875.

37. *Extirpation of the Larynx*.—We noticed in our Nos. for April and May, 1874, the two operations of BILLROTH on a patient for the removal of a carcinomatous growth from the larynx. The patient recovered from the first operation but the disease returned, and the patient died six months after the operation.

In our No. for January, 1875, is a notice of a second operation by Prof. BILLROTH of the same kind, for an epitheliomatous growth. The patient died, five days afterwards.

Dr. SCHMIDT, of Frankfort, extirpated the larynx of a man, who died four days afterwards.—*Ges. Hebdom.*, 7 May, 1874.

Prof. HEINE, of Prague, has also extirpated the larynx less the epiglottis for epithelioma, and five months afterwards there was no sign of a recurrence of the disease.—*Schmidt's Jahrbuch*, Nov. 1874.

Finally BOTTINI extirpated the larynx of a man, February 2, 1875, with epithelioma of that part. The operation lasted an hour and a half, the patient was very much enfeebled by the loss of blood, but ultimately rallied, and the wound cicatrized.—*Gaz. Hebdom.*, 7 May.

The patient was a countryman, aged thirty-four, who had for some time suffered from attacks of orthopnoea, from a mechanical obstruction in the larynx. In August, 1874, the dyspnoea was so urgent that laryngotomy was performed in the crico-thyroid space; this relieved him, and a tube was left in the opening. In October, Professor Bottini was called to see him in consultation with Dr. Perassi. The galvanic cautery was applied with the object of freeing the larynx from the morbid growth which occupied it; but the larynx remained impervious to air. Attempts were then made to dilate the parts by means of laminaria tents; but, though repeated several times, they were not successful. The patient was accordingly admitted into the hospital, and Dr. Bottini extirpated the larynx on February 6, of this year. Chloroform was not given.

An incision about five centimètres (nearly two inches) in length was made from the hyoid bone down to the artificial opening in the larynx; then, by means of horizontal incisions to the right and left, two flaps were formed, which were dissected and turned outwards. The anterior part of the larynx was then carefully laid bare, the edges of the wound being held apart by hooks, and the connection between the larynx and the œsophagus was severed by means of the fingers and blunt instruments. This part of the operation was rather difficult, in consequence of the shortness and thickness of the patient's neck, and of his

continued attempts to expectorate. These attempts were so violent that the patient, three or four times during the operation, expelled the canula with the sputum. It was found impossible to remove the larynx by at once cutting it free from the trachea below and the hyoid bone above, and the process had to be suspended several times to allow the patient to relieve himself by coughing up the mucus and blood, which escaped into the trachea notwithstanding all the care that was used to prevent it. Several arteries, especially the two superior laryngeal, were tied, and the galvanic cautery was applied to others.

The subsequent history of the case shows that on the 11th erysipelas set in, but disappeared by the 21st, from which time the patient's temperature did not exceed 98.9° F. and the pulse 80. He was on the latter day able to swallow fluid and semi-fluid food; the paroxysms of cough had become rare and slight; the wound had healed, for the most part by the first intention notwithstanding the erysipelas; he slept fairly well at night; and altogether his condition was promising.

No account was given of the nature of the disease for which the operation was performed; but Dr. Martelli intimates that a complete account of the case will be published by Professor Bottini.—*Gazzetta delle Cliniche*, March 9, 1875.

Thus of the five operations three are known to have terminated fatally, and in the remaining two the operations are too recent to know the final result.

38. *Removal of a Foreign Body from the Pharynx by Pharyngotomy.*—Mr. W. J. WHEELER detailed to the Surgical Society of Ireland March 19, 1875, a successful case of removal of a foreign body impacted in the pharynx by the operation of pharyngotomy, performed, for the first time in that country, by him in the City of Dublin Hospital. He remarked that the majority of surgical writers say little or nothing of pharyngotomy, and appear to confound the operation with œsophagotomy. Foreign substances when extracted otherwise than by the mouth have almost in every case been removed by œsophagotomy, and no account is given of the performance of pharyngotomy before the cases graphically detailed by Mr. Cook in *Guy's Hospital Reports*. The steps of the two operations are different, the same structures are not engaged, the parts to be avoided are not similarly situated, and there is not the same readiness in getting at the pharynx as at the œsophagus. The difficulty of pharyngotomy is increased also by the much greater proximity of the common carotid, the danger of wounding the thyroid gland, the almost absolute necessity of dividing the insertion of the omohyoid muscle, and the danger of wounding the inferior thyroid artery. The case in which he operated was that of a man aged 45 years, in robust health, who had accidentally swallowed a needle. The patient endeavoured to withdraw it by pulling at a thread which hung from it, but as it had slipped down eye foremost it became impacted. The laryngoscope showed the needle somewhat obliquely situated, with its eye buried in the left palato-pharyngeus muscle, and its point in the left arytenoid cartilage. On endeavouring to extract it with the forceps it appeared to slip through the blades. Similar attempts next day with different kinds of forceps proved unavailing, and the patient suffered so much laryngeal distress that he was allowed rest three or four days, after which it was found so firmly imbedded that all attempts to depress or dislodge one end of the needle were unsuccessful. As the patient then became pale, thin, and haggard looking, continued unable to swallow solid food, and occasionally suffered considerable pain, which prevented sleep, it was determined, after due deliberation, to remove it by pharyngotomy. The patient having been put under the influence of chloroform, Mr. Wheeler made an incision on the left side of the neck from the body of the os hyoides to the superior margin of the cricoid cartilage, through the integument and fascia. A small vessel, probably the sterno-mastoid branch of the superior thyroid artery, required to be ligatured. The layers of fascia were taken up and cautiously divided on a director, until the common external and internal carotid arteries, the superior thyroid body, and superior laryngeal nerve, with some descending filaments of the ninth nerve, were exposed to view. The attachment of the omohyoid muscle was then separated, and the chloroform discontinued. A staff passed into the mouth was caused to bulge in the left

side of the pharynx, and an incision sufficient to admit the top of the index finger made down on it. The staff being removed, the opening was enlarged upwards and downwards, and a finger passed behind the ala of the thyroid cartilage, but the needle could not be felt. A small forceps was next passed in on the palmar aspect of the left index finger, but it did not catch the needle. Mr. Wheeler then passed his forefinger upwards towards the mouth, and brought the thread from the mouth through the wound. On following the course of the thread he found the needle imbedded in the soft structures, and had to scrape with his nail until he came upon it, whereupon by slight traction on the thread and grasping the needle with the forceps the foreign body was removed. During the operation the patient suffered great dyspnœa, the face was congested, the eyes protruded, and perspiration poured off his face. No sutures were put in the gullet; the edges of the wound were approximated with carbolic sutures, and lint soaked in carbolic oil was laid over the wound. A bread and milk poultice was placed over the abdomen, and renewed in four hours; nutritive enemata were given, and a sponge soaked in iced milk was occasionally squeezed into the mouth or given in teaspoonfuls, and though some came out through the wound the greater part followed the natural course. The second day after operation the edges of the wound were slightly inflamed, and an abscess in the vicinity discharged through it, as the edges had not, in anticipation of such result, been drawn together. After eleven days fluid ceased to come through the wound, and the patient was discharged cured after the lapse of a further fortnight. Mr. Wheeler directs attention in the performance of such an operation to the immediate arrest of hemorrhage from the small vessels necessarily divided, so that none of the parts may be obscured; to having the vessels well retraced; to having a staff put into the pharynx from the mouth; not to pass a knife into the pharynx to enlarge the opening up and down, as recommended by Mr. Cock, and so avoid producing hoarseness and wounding the filaments of the nerves; not to mistake the thyroid gland for the gullet; and to operate on the left side as being more convenient than the right, unless contraindicated by position and size.

39. *Traumatic Popliteal Arterio-venous Aneurism successfully treated by Ligature of the Popliteal Artery and Vein.*—Mr. THOS. ANNANDALE reports (*Lancet*, April 24, 1875) a very instructive case of this. The subject of it was a boy aged 10, admitted into the Edinburgh Royal Infirmary October 28, 1874, who three months before admission had received a wound in the popliteal space from the point of a pair of scissors. The hemorrhage was stopped by a compress and bandage. After a few days the boy was allowed to go about. A swelling was observed in the popliteal space, and when admitted it had acquired the size of an infant's head, was of an irregular shape, pulsating, "and when the hand was placed over it, the characteristic aneurismal expansion could be felt on all its aspects. No peculiar thrill could be felt in the swelling. Pulsation was absent in the anterior and posterior tibial arteries at the ankle. At one point the swelling was very prominent, and the skin over this point was thinned and discoloured.

"The case being diagnosed as one of traumatic aneurism of the popliteal artery, it was decided to treat it by laying open the sac and tying the artery above and below the wound.

"On the next day—the 29th of October—I proceeded to operate in the following manner. A tourniquet being applied to the femoral artery in the upper part of the thigh, I made a small incision into the centre of the sac, sufficiently large to admit my forefinger. My reason for making this limited opening in the first instance was, that I could, if necessary restrain any hemorrhage until the finger had made an examination of the sac and separated any adherent clots. I learned the value of this practice in assisting the late Mr. Syme in most of his serious operations on large aneurisms. Having searched the sac with my finger, I gradually withdrew it so as to lay the whole cavity open, but on doing so free bleeding took place, and, as it seemed probable that this hemorrhage was coming from the distal end of the wounded artery, an elastic ligature was applied round the upper part of the leg, the finger being kept in the wound as

a plug in the mean time. The sac was then opened freely by a wound about five inches in length, and all the blood and clot in it sponged out. There was not very much clot, the contents consisting principally of fluid arterial blood. By this proceeding two openings were clearly exposed at the bottom of the sac. These openings were parallel to one another at a distance of about an eighth of an inch in the longitudinal direction of the limb. They were both about a quarter of an inch in length, and had the appearance of slits with little gaping of the edges. A probe passed into each opening determined the fact that one communicated with the canal of the popliteal artery, and the other with that of the popliteal vein. The canals of both vessels were pervious as far as the probe would pass above and below the wounds. The sac of the aneurism was well formed, circumscribed, and white and smooth on its inner surface. The popliteal artery, being carefully cleared by dissection for a short distance, was ligatured above and below the wound with prepared catgut; and the popliteal vein, being cleared in the same way, was also ligatured above and below the wound with the same material. The tourniquet and elastic ligature were now removed, and a small artery and vein which bled, in the region of the wounded vessel, were tied also with catgut. A drainage-tube was then introduced into the cavity, and antiseptic muslin was applied in the usual way, after the edges of the wound had been stitched together. The whole operation was performed under the antiseptic spray."

The case progressed favourably, and by the 26th of December, the patient walked freely without support on the affected limb.

Mr. A. remarks that the "case is one of great importance in connection with the surgery of the bloodvessels. The absence of the peculiar thrill which has always been considered diagnostic of arterio-venous aneurism is a point of interest. Had the operation not so distinctly disclosed the presence of a wound in both artery and vein, I and those who saw the case would have looked upon it as one of *traumatic aneurism of the popliteal artery*. The reported cases of traumatic arterio-venous aneurism of the large arteries are not numerous, but in most of these, as far as I can ascertain, this symptom was observed, and directed attention to the true nature of the case. An examination of the wounded popliteal vein, made at the time of the operation, did not discover any appreciable dilatation of its canal, such as has usually been noticed in arterio-venous aneurism, and therefore I am inclined to think that, although a wound in both artery and vein communicating with the aneurismal sac existed, there was little or no communication through these wounds between the arterial and venous circulation. This conjecture may be explained by the longitudinal direction of the wound in the vein, and its position in regard to the corresponding wound in the artery. Be the explanation what it may, the fact of the absence of the peculiar thrill in this instance must be considered as quite exceptional in connection with arterio-venous aneurism.

"The most instructive part of this case is a consideration of the treatment which was successfully adopted. . . .

"The method employed in the case related has, as far as I am aware, never before been practised, but it is only just to state that Mr. Holmes, in his remarks, suggests the advisability of this proceeding, and refers to instances where both arteries and veins have been obstructed or ligatured without bad consequences following.

"The result of the operation in my case tends to prove that surgeons have taken a too serious view of the risks likely to follow the ligature or obstruction of the principal artery and vein of a limb. One principle in all former operations for the relief of arterio-venous aneurism has been to avoid any interference with the vein, but this case has now practically demonstrated that both artery and vein may be successfully ligatured.

"Should carefully applied compression fail to relieve an arterio-venous aneurism, my recent experience inclines me to advocate the operation performed in the present instance, provided the case be one otherwise suitable for an operation.

"The advantages of this plan are, in my opinion, (1) certain closure of the openings of communication in both artery and vein; (2) absence of any risk

from venous hemorrhage or absorption in connection with the wounded vein; (3) its practicability in the large majority of cases; (4) its easy performance without much dissection.

"By the employment of the antiseptic treatment in the present case, all local irritation in connection with the sac and wound was prevented, and suppuration was limited to the single discharge of a few drops of innocent pus."

40. *Excision of Scapula*.—Prof. FISCHER has extirpated the scapula in two cases on account of tumours. In one case, an enchondroma weighing about 7 lbs. 10 oz. was the cause of the operation; in the other, there was an ossifying myxochondroma as large as a head. One patient was aged 34, the other about 40. In both cases the operation was performed in the same way. The incision was made along the spine of the scapula; and, after exposing the tumour, the neck of the scapula was sawn through and the bone removed, each bleeding vessel being at once tied. Lister's antiseptic method was used during the operation and in the after-treatment. The traumatic fever was moderate, and there was little suppuration. After four and five weeks respectively, the patients left the hospital. In both, there remained flattening of the shoulder, limitation of movement at the shoulder-joint. The arm could be raised to an angle of 50 degrees in one case, and of 60 in the other. One of the patients was able to perform laborious agricultural work. Dr. Fischer believes that an incision along the spine of the scapula makes a comparatively small wound, and at the same time affords sufficient room, and allows the muscles to be preserved.—*Brit. Med. Journ.*, from *Deutsche Klinik*, No. 1, 1875.

41. *Extroversion of the Bladder and Epispadias*.—Dr. GEORGE WILKINS, Prof. of Pathology at the University of Bishop's College, communicated to the Medico-Chirurgical Society of Montreal a case of this in a lad sixteen years of age, upon whom he operated by Prof. Wood's method.

"With the exception of a slight attack of erysipelatous inflammation at one of the edges of the wound, patient did extremely well, so that in about six weeks after the operation, the large gaping wound left by removal of integument, which, of course, was last to heal, was almost closed up, leaving a long and narrow cicatrix as shown in last photograph.

"Contraction caused by cicatrization, however, was greater than I had anticipated, and in consequence a small portion of lower surface of bladder was still left exposed to view. The large thick flap above prevented clothes from touching it, so that no inconvenience resulted.

"The greatest annoyance to patient previous to operation was the rubbing of his clothes against the very sensitive mucous membrane of bladder, in walking, more especially in going up and down stairs. His suffering from this cause was very much relieved by the operation. He could now walk with comparative ease. On account of this fact, and his sleeping so much better in the chair than in bed, he was so satisfied with his improved condition that it was difficult to get him to consent to another operation, that for restoring the penis. He appeared to dread the ether; it caused such unpleasant sensations for hours after consciousness was restored. However, in February last he consented, and with the same valuable assistance as in former operation, I proceeded as follows: An incision was commenced at the side of that portion of bladder left uncovered by former operation, about an inch external to margin, and carried downwards and around the angle between penis and scrotum to point on opposite side of bladder corresponding to commencement of incision. A second incision was begun about two inches directly beneath the commencement of the first one, and carried down the outer margin of scrotum, then along its lower margin and up outer margin of the other side of scrotum to a point corresponding to commencement of incision. Between these two incisions was embraced the whole of the integument of the scrotum as seen from front. This was dissected up, and the flap left exposed to the air for a few minutes to check bleeding.

"An incision was also made along the sides of penis, commencing where the first incision passed downwards, and carried as far as the glans. The integument at each side of the bladder was then dissected up, and the two sides folded on themselves and approximated as much as possible in front of the bladder by means of silk sutures. The integument above the incisions at each side of the penis was also dissected up to the extent of about half an inch, so as to afford a sort of groove into which edges of flap about to form roof of urethra was to be placed. The surface of lower edge of flap formed by first operation was also laid bare.

"All bleeding having ceased, the integument covering scrotum, which had just been separated from its connection there, still, however, retaining communication at each side, with integument covering groin, was lifted over penis, and placed somewhat like a saddle upon it and lower portion of bladder. Its upper border was then connected by sutures with lower border of old flap, its outer edge was fitted into groove made at each side of penis and held there by sutures, whilst its lower end was free, projecting slightly beyond end of glans penis. Thus what remained exposed of bladder after former operation was completely covered, and the gutter of urethra was converted into a covered channel.

"The testicles were covered by drawing in front of them the edges of integument left on posterior surface and sides of scrotum.

"A piece of rubber tubing was placed in urethra to allow of free exit of urine.

"In this operation thirty-five sutures were used.

"Patient did almost as well after this operation as after first. The progress of repair was, however, slightly delayed. A small portion of flap on left side of penis sloughed, but in no way interfered with ultimate success; for the first two or three weeks a fistulous opening existed about the centre of the line of union of the old and new flaps in front of bladder, but this, under appropriate treatment, soon closed up.

"Ever after this last operation all urine passed through his newly made urethra. For about two or three months patient complained of much pain: he was not as comfortable as after first operation. This uneasiness was due to my omitting to take the precautionary measure recommended by Wood, that of previously destroying all the hair follicles by means of nitric acid. The small portion of integument reflected over the bladder from the sides had several hairs, which, of course, were shaved off before operating, but subsequently grew, and each hair thus afforded a nucleus around which phosphates were deposited, and accordingly grated on the sensitive mucous membrane, causing much pain, and at times bleeding. This condition, however, was greatly relieved by nitric acid lotion, with which he injected bladder twice a day.

"As the hairs grew they made their appearance at the orifice of the urethra, and with a forceps the patient was able to pluck them out, and in this way he gradually became more and more free from his troublesome symptoms. As the hairs are pulled out, the urine will eventually destroy all the follicles."—*Canada Med. Record*, March, 1875.

42. *Successful Operation for Stone in the Adult*.—Sir HENRY THOMPSON makes (*Lancet*, April 3, 1875) some important practical remarks on this subject. After referring to the famous 84 lithotomy operations of Martineau (*Med. Chirurg. Trans.*, vol. xi.) in which there were but 2 deaths, he analyzes the list with reference to sex and age. It will be noted, he says, "that a very large proportion were children, while 6 were females; deducting these latter, there remain 78 male cases, of which not less than 34 were under 15 years of age, leaving only 44 adults. Of these 44 adults, no more than 12 were upwards of 60 years of age; only 24 were 50 years old and upwards, giving for the latter a mean age of 62½ years; the 2 deaths occurred among them.

"No error is more common than that of comparing lists of cases without noting this most important element of age. Death after lithotomy in children is notoriously infrequent; indeed, it is a result scarcely to be expected, unless

under circumstances of some rarity. During middle life, also, lithotomy is a very successful operation; but at the age of 60 and upwards it is one of considerable risk. Hence, unless an exact statement respecting the patient's age is afforded, no inference can be drawn from any number of cases of which the results are reported. A mere statement of the number of patients operated on, with the proportion of recoveries and deaths, is absolutely valueless, and is often misleading.

"I wish now to compare with the above a series of my own, and shall take for that purpose simply my last 100 cases, as a round number easily dealt with, of operation in *the adult*. I have not included in my list any patient below 22 years of age, at which there happens to be one. There are, indeed, only four patients, including that one, below 50 years of age, while in Martineau's series of 84 there is not less than 54 below that age. Of my 100 cases, 65 are above 60 years of age (only 12 are above that age in Martineau's list), and the mean age of the entire 100 cases is not less than $63\frac{1}{2}$ years (the mean of Martineau's entire adult series is under 47 years); consequently the age ranges far higher in my series than in his.

"My present 100 cases commenced shortly before Christmas, 1872, and includes every one operated on by myself up to the present time; it consequently represents my entire work of the last two years and a quarter. It may be worth while naming, in order to show that I have not carefully selected the term, that it commences just before the death of the late Emperor Napoleon, which is the third case of the series.

"96 were adult males, 4 were adult females.

"Of the 96 males, 87 were operated on by lithotripsy and 9 by lateral lithotomy.

"The mean age of the 87 operated on by lithotripsy is $63\frac{1}{2}$ years, the oldest being 83, the youngest 22, but only 4 were below 50 years.

"The mean age of the 9 operated on by lithotomy was $63\frac{1}{2}$ years also, their respective ages being 36, 59, 59, 61, 63, 70, 75, and 79.

"Among the 87 operated on by lithotripsy were 4 deaths; the ages were 61, 65, 66, and 81.

"Among the 9 operated on by lithotomy were 2 deaths—viz., at 61 and 63.

"Thus it will be seen that there was a total of 6 deaths in 96 patients, with a mean age of $63\frac{1}{2}$, by the two operations.

"While alluding to what has been termed a run of successful cases in practice, I may observe that in this 100 of mine there was one more remarkable than I have ever before witnessed or heard of. I had a succession of 51 elderly adult cases without a single death. They occurred between July, 1873, and June, 1874. These 51 cases (7 more than Martineau's entire adult series of all ages) had a mean age of 64 years.

"I wish to present this brief *résumé* as a fair example of what careful selection of the two operations is now capable of accomplishing for calculous patients. It is a little better than my entire average, including all my earliest experiences. What that is I hope soon to give to the profession in a complete form. I hope then to have the opportunity of recording all that I have been able to glean from an unbroken series of 500 cases in the adult male, besides the cases of women and children."

43. *Treatment of Contusions and Wounds of the Perineal Portion of the Urethra.*—Dr. MANSON, in his *Thèse de Paris*, 1874, formulates the following rules for the treatment of these serious injuries, which may compromise the health of the patient after he has passed through the first symptoms. He says that, in contused wounds of the urethra, a *sonde à demeure* and perineal urethrotomy are the means to which recourse must be had. Perineal urethrotomy is principally indicated whenever the canal is destroyed to a great extent and catheterism is impossible. It should be performed with the least possible delay; and, if practicable, a *sonde à demeure* should be placed in the urethra before twenty-four hours have expired, for later on the swelling and the infiltration of urine sometimes make exploration difficult, and have thus rendered treatment unavailing. After perineal urethrotomy, keeping the penis

elevated during the time the sound is left *in situ* is, Dr. Manson believes, a good means of avoiding inflammatory accidents, which for the most part are the result of the stagnation of the pus at the level of the suspensor ligament, this stagnation being in great part due to the flexion of the penis.—*London Med. Record*, April 14, 1875.

44. *Stricture of the Urethra*.—Mr. W. F. TEEVAN, Surgeon to West London Hospital, states (*Brit. Med. Journ.*, May 29, 1875), "Of all the cases of operation for stricture that have come under my care, in which the operation was performed by myself or others, I have never yet met with one in which an examination with the *bougie à boule* did not detect some remains of the strictures, though years might have passed away after the operation. Nearly all the published cases of operation for stricture have been deprived of most of their value from the fact that the authors have given only the temporary effects of the operation, and not the trustworthy results which are to be seen a couple of years afterwards. On this subject, Mr. Cooper Forster made a most pithy and apposite remark in reference to a case of operation for stricture which was narrated at the Clinical Society. He said, 'I do not care to see the patient now, but I should very much like to examine him two years hence.' Herein lies the whole gist of the subject. The present state of the question is this: no surgeon has as yet been able to produce that evidence which would alone carry conviction; and so long as this is wanting, and we every day have cases of relapse after each and every kind of operation, we must come to the conclusion that no operation is desirable except in certain exceptional circumstances. Hence, therefore, as no operation can cure a patient, it is our duty never to recommend such a procedure unless it is absolutely called for, as we are not justified in endangering the safety of a patient's life, just to humour his whim, when we can achieve, by gradual dilatation, which is absolutely free from all danger, all that is open to us. The treatment of a stricture is a treatment for a lifetime, and he who fails to recognize this important truth deceives himself or his patient. Fifty years have now rolled away since the great Delpach wrote the following words, and no English surgeon has been able to reverse his judgment. 'Quant à la coarctation elle-même, il est presque superflu de dire que nous avons bien vérifié combien cette affection est incurable, et ne peut être que soulagée passagèrement, et conserve une tendance invincible à se reproduire insensiblement. Il en est constamment ainsi, quels que soient les moyens par lesquels elle a été combattue. Ce serait abuser de la crédulité des malades et des médecins, et se jouer de la vérité, que de prétendre le contraire.'"—*Chirurgie Clinique*, vol. i. p. 273.

45. *Treatment of Anal Fistula by the Elastic Ligature*.—In a clinical lecture delivered at the Hôtel-Dieu, Saint-Eloi, Professor COURTY, of Montpellier (*Bulletin Général de Thérapeutique*, January 30, 1875), highly extols the use of the caoutchouc ligature for deep and extensive rectal fistula. For years, he says, he has in all bad cases avoided the knife, believing that considerable danger from bleeding is incurred at the time of operating, and also afterwards, especially when the case is complicated by the existence of internal hæmorrhoids; there is also an additional source of danger; a large suppurating surface is left which is liable to erysipelatous inflammation, and may give rise to phlebitis, purulent infection, etc. Another objection to the wound made by incision is, that it requires much and constant dressing, to obviate the tendency to the formation of a new fistula by the growing together of the divided parts, which dressing is alike troublesome to the surgeon and painful to the patient. These, among other considerations, have induced Dr. Courty to prefer the linear *écraseur*, or the "ligature ulcéralive," and with both of these he has met with considerable success; nevertheless, these methods have their disadvantages. The operation by the *écraseur* is excessively painful, and so is the ligature, either of thread or wire, as it has from time to time to be tightened; these and other objections are entirely removed by the adoption of an India-rubber ligature; when this is passed through the fistulous track and securely knotted, Dr. Courty says he considers the surgeon's work is really

ended, scarcely any supervision is required, and no dressing needed; all that is necessary is to keep the part clean, and the patient may inject into the fistulous passage from time to time a lotion of coal-tar or carbolic acid. All Dr. Courty's patients have done remarkably well. There has been no hemorrhage; the pain has been but slight and easily controlled by sedatives; many patients after the first day did not keep their beds, but walked about the chamber, and even went out of doors; and no secondary accident has occurred, the wounds healing with great facility. To lessen pain at the operation, and give ease after it, Dr. Courty directs his patients to take every hour (commencing some hours before the operation) small doses of morphia and chloral alternately; this is continued until all the pain subsides. The ligature comes away in from six to eighteen days, the most usual time being nine days, by which time the wound is generally nearly cicatrized. Dr. Courty prefers the tubular to the solid India-rubber, the former being, in his experience, of more uniform strength and less liable to fracture.—*London Med. Record*, March 24, 1875.

46. *Reduction of Dislocation of the Femur by Manipulation.*—Prof. DOLBEAU furnishes an account of his experience of reducing dislocations of the femur by manipulation. During the seventeen years he has been a Paris hospital surgeon, he states that he has reduced fifteen of these dislocations, twelve of them being ilio-ischiatic, two ilio-pubic, and one ischio-pubic. All have been reduced by himself without assistance and without difficulty, the *procédé de Desprès* having been employed in all of them. This was really the method of combined flexion and rotation employed by Pouteau in the last century, but revived and erected into a system of Desprès in 1835. Of course, since then, the use of chloroform, by means of which complete muscular resolution is obtainable; has immensely added to the practicability of the measure.

One of the cases related is very remarkable from the unexpected way in which reduction took place. A youth was brought to the hospital who fifty-five days before had his right leg fractured. This did very well; but, it being found that the patient could not walk, it was discovered that the same accident which had caused a fracture of the leg had also dislocated the femur. This had been overlooked; and now, in order to see what could be done for it after so long a period, the patient was put under chloroform. When resolution was produced, the thigh was suddenly flexed, and the cracking noise that occurred indicated the rupture of some of the adhesions. The flexion had passed beyond a right angle, and it was evident an ischiatic dislocation was present. Adding immediately to the flexion the rotation of the limb outwards and downwards, M. Dolbeau, to his great astonishment, found that reduction had been effected; what was intended, in fact, for a mere exploratory examination having proved a complete cure.

In another case, in which the luxation was supra-pubic, M. Dolbeau resolved to imitate a plan adopted by Larrey in a case which had resisted very energetic extension. This consisted in placing the luxated thigh on the shoulder of the operator while he pressed with both hands on the displaced head. While, however, he was placing the thigh on his shoulder, and, of course, flexing it on the pelvis, he perceived the head descending towards the acetabulum, and had only to execute a slight rotation inwards to secure complete reduction. In another case there was dislocation outwards and downwards of eight days' duration, for the reduction of which repeated and violent traction had been employed in vain. The subject was a vigorous young man, who was also a drunkard, so that chloroform had but little effect upon him. On the first trial of Desprès' method, the dislocation, from being iliac, was transformed into one of the sciatic notch, and then of the foramen ovale. The rotatory movement employed had probably been too energetic, the head having turned round two-thirds of the cotyloid cavity without entering it. As the muscular resolution still continued imperfect, although chloroform had been given abundantly, the administration of this was pushed almost to a dangerous extent; and, just when the patient's situation seemed critical from this cause, very strong flexion of the thigh, followed by a moderate rotation downwards and inwards, effected the reduction. From this case it is evident that the procedure enables

us to move the head just as much as we want, and that without taking care we may even go beyond the object we have in view, and, while passing along the border of the cavity, convert an external into an internal luxation.

Prof. Dolbeau's general conclusions are—1. That all recent dislocations of the femur, whatever their varieties may be, may be reduced by Desprès' procedure. 2. That this procedure, which belongs to the gentle methods, is often attended with success in cases in which the forcible method fails. 3. That flexion of the thigh, combined with rotation of the limb, enables the head to become disengaged from all the obstacles that may retain it, and at the same time to pass along the various portions of the circumference of the acetabulum until it is brought into relation with the laceration of the capsule, the only aperture by which it can re-enter the cavity. 4. Before having recourse to forcible measures his procedure should be tried, after complete muscular resolution has been obtained by the administration of chloroform. The value of the method has, in fact, become double since the discovery of chloroform.—*Med. Times and Gaz.*, April 17, from *Bulletin de Thérapeutique*, March 15, 1875.

47. *Elastic Ligature for the Cure of Webbed Fingers.*—Dr. MARTIN VOGEL of Eisleben records the case of a puny child, one of twins, three months of age, with webbed fingers in which he successfully resorted to the elastic ligature. The deformity was symmetrical on the two sides, and consisted in a complete union between the third and fourth digits, which were exactly equal in length. On the dorsal aspect the skin passed from one to the other without showing the trace of an intervening furrow, while the joints looked as if they were common to the two fingers. The nails were much curved on the outer sides, but at the contiguous parts they were smoothed off one against the other so that the interval between them would admit, at most, a stout sheet of paper. On the palmar aspect the fingers had only one tip without any appearance of a division, and the folds opposite the joints were common to the two; but a shallow pink line passed from the base of the last phalanges to the natural position of the commissure, indicating the place where separation ought to have occurred. The joints were freely movable, and there was in addition a slight lateral mobility in the neighbourhood of the middle articulations, but the terminal phalanges were united together by a broad piece of bone, which passed from base to base. The hands were altogether diminutive, and between the two there was only this difference—that in the right the nails were less closely pressed together, and the common terminal phalanx was somewhat broader than in the left.

It is evident, as the author remarks, that this was a difficult case to deal with, not only because of the bony union between the last phalanges, which it would have been a matter of difficulty to divide, but also because, from the thickness of the web, an operation with the knife would have necessarily left a very wide raw surface. He accordingly determined to make an attempt with the elastic ligature, of the efficiency of which he had already convinced himself. The first India-rubber thread was entered just above the last phalanx, and was tied over the tip of the united fingers, care being taken that it occupied an exactly intermediate position between them. At first no inflammatory disturbance resulted, but after a few days slight suppuration set in, accompanied by a little feverishness; and after eight days the phalanges, bones and all, were completely separated from one another, the resulting wound being only half the width of that which would have followed a cutting operation. During the process the ligature required tightening by placing a small roll of plaster under it over the tips of the fingers. The remainder of the web was divided by one ligature, which, however, required frequent tightening. It was complete in five days, but during this period there was considerable inflammation of the parts, with a good deal of fever, and a small abscess formed on the fourth finger, which required opening. Afterwards the two fingers were separated, and fixed with plaster on a pasteboard splint, and cicatrization went on rapidly, while to prevent the reformation of the web at the junction of the fingers an elastic

thread was attached to a band placed round the wrist and gently stretched between them. After a few weeks the fingers, though still somewhat deformed, had so far regained their natural appearance that the minute scars on the contiguous sides required a careful search for their discovery; but though the cleft was in its normal position on the palmar aspect, on the dorsal surface it was placed rather too far forwards.

The operation on the right hand was almost an exact repetition of that described, but here no inflammation of importance was set up, which may be attributed partly to the fact that each pair of phalanges were divided separately in consecutive operations, and also that salicylic instead of carbolic acid was used as a dressing. By March of this year the fingers of this hand also might be described as completely normal, both in appearance and as regards their usefulness.

If we take into consideration the difficulty that often exists in rectifying this deformity, however it may have arisen, and the various complicated methods suggested for its cure—including the ingenious mode of transplanting skin to fill the deficiency, proposed by Mr. Barwell—it must be allowed that a good deal may be said for the advantages claimed for this operation by Dr. Vogel. 1. Although easy of performance it is quite free from danger. 2. An operation need not be avoided because the web is thick and the skin insufficient to form a covering. 3. It affords the easiest opportunity of successfully preventing the much-dreaded re-establishment of the web.—*Med. Times and Gazette*, May 15, from *Centralblatt für Chirurgie*, March 20, 1875.

48. *Ovarian Cyst treated by Simple Puncture*.—M. VAST communicated to the Surgical Society of Paris, a case of ovarian cyst unsuited for ovariectomy, in which the simple puncture of the cyst performed 119 times in three or four years afforded marked relief to the patient and certainly prolonged her life.—*L'Union Médicale*, 4 May, 1875.

49. *Strangulated Inguino-Scrotal Hernia; Failure of Taxis both without and with Chloroform; Reduction by Taxis, the lower limbs being raised by an assistant so that the patient rested on his head and shoulders at the edge of the bed*.—The details of an instructive case of this are related by M. PERIER, in the *Gaz. Hebdom.* for June 4th, 1875. M. P. calls our attention to two errors in the reports of his case in the French journals, and, of course, in our notice taken from them, which we take pleasure in correcting (see Nos. for Jan. 1875, p. 275, and April, p. 576). The editor of the *Gaz. Hebdom.* was mistaken in supposing that Dr. Perier claimed originality for his treatment of the case; on the contrary, in his full report now published, he states distinctly that he was led to resort to the inclined position with taxis from reading the interesting paper on this method of treatment, by Dr. D. Leasure, in the *Am. Journ. Med. Sci.* for April, 1874. Again, the editor of *La France Médicale* has erroneously ascribed the operation to M. Perrin instead of M. Perier.

M. Perier lays particular stress upon the fact, that, when the patient's head and shoulders rest on the bed with the lower limbs raised, there is an incurvation of the spinal column, which sufficiently relaxes the anterior abdominal parietes for the bowels to be controlled to a certain extent by gravity.

OPHTHALMOLOGY.

50. *Medical Ophthalmoscopy and Cerebroscopy*.—M. BOUCHUT gave a special lecture at the Hôpital des Enfants Malades, of Paris, to a certain number of his professional brethren. As reported in *La France Médicale* of March 27, he first showed the anatomical and physiological relations of the eye with the brain or the spinal marrow, so as to make understood the influence of the cerebro-spinal lesions on the optic nerve, the retina, and the choroid. He

then indicated the laws of the formation of intra-ocular lesions depending on diseases of the brain, spinal marrow, and meninges.

These laws are four in number. 1. Whenever the circulation is obstructed in the cranium, or in the sinuses or meningeal veins, in consequence of compression through distension of ventricles distended by serosity or any other cause, an arrest of the venous circulation occurs which produces swelling, hyperæmia, and œdema of the papilla, varicosity of the veins, and sometimes hemorrhage in the eye. 2. When a tumour with encephalitis, or partial encephalitis, is present, a descending phlegmasia occurs which brings on sclerosis of the optic nerve, exudations which imprison the papilla, and eventually produce atrophy. 3. If it be the spinal marrow which is diseased by anterior or posterior sclerosis, since that organ, on account of its relations with the great sympathetic nerve, acts on the eye, papillary hyperæmia of the eye results, which in time brings on atrophy. This is what is seen in locomotor ataxy. 4. Finally, in all diatheses and in poisonings, when the whole organism suffers, the eye suffers like the rest of the body, and certain forms of neuritis or choroiditis result. After this preamble, M. Bouchut, by the aid of his luminous projection, showed on the wall specimens of all the ocular lesions produced by cerebro-spinal diseases. He showed the forms of spinal neuritis and those which result from locomotor ataxy, the neuritis and neuro-neuritis, produced by tuberculous, typhoid, or rheumatismal meningitis, by cerebral hemorrhage and softening, by hydrocephalus and thrombosis of the sinuses of the dura mater, by chronic encephalitis, and encephalitis resulting from cardiac disease, by tumours of the brain, tuberculosis, syphilis, albuminuria, leucocythæmia, etc., and finally the neuritis resulting from paralysis of the sixth pair, in consequence of certain kinds of epilepsy, hallucination, contusion of the brain, etc.

In this way a hundred images were shown, the most important of those which have been figured since M. Bouchut commenced his researches. He has thus opened a new road to the diagnosis of cerebro-spinal diseases.—*London Med. Record*, April 14, 1875.

51. *Significance of Congestion Papilla, or Choked Disc, in Intra-cranial Disease.*—Dr. H. R. SWANZY, in an article on this subject (*Dub. Journ. Med. Science*, March, 1875), says: "Every observer admits that intra-cranial tumours give rise to congestion papilla, and I think most of them would at least allow that it is the most frequent cause of this appearance. The only wonder is that congestion papilla is not found in every such case, if the accepted mode of its production be the true one. When the tumour is small, we may imagine that the disturbance produced by it is inadequate to give rise to the choked disc; but still cases of it are recorded where the new growth within the cranium was comparatively small, while enormous tumours of the brain are every day coming under our notice, in which not only is there no congestion papilla present, but often also no other diseased condition of the optic nerve. No satisfactory explanation of this apparent anomaly has as yet been given. Possibly it may depend upon individual differences in the anatomical relations of the lymphatic space and optic nerve, which are yet to be ascertained. Hermann Schmidt puts forward the hypothesis that in some cases, by compression at the foramen opticum, either from a tumour or otherwise, the communication between the arachnoid space and the sheath of the optic nerve may be cut off, and thus the transport of the fluid into the latter prevented. I have always inclined to an opinion that the rate of growth of a tumour might be the ruling factor in this respect. If the tumour increases in size very slowly, the parts may be enabled to accommodate themselves to the pressure, or, by the gradual absorption of brain substance, there might actually be no increase of intra-cranial pressure produced. On the other hand, if the tumour from the beginning grows very rapidly, or, although growing slowly at first, if it afterwards advances quickly, we can understand that, for converse reasons, it would be more likely to cause congestion papilla."

He concludes that "while true congestion papilla is not pathognomonic of intra-cranial tumours, it is extremely rare as a symptom of any other intra-

cranial disease. It has been observed in a few cases of meningitis, chiefly in children, so that its value as a symptom of cerebral tumour is even greater in adults than in young people."

52. *Appearance of the Optic Nerve during Acute Disease of the Brain.*—In the *Klinische Monatsblätter* for December, 1874, will be found an interesting paper which was read at the last meeting of the Ophthalmological Congress, in which Professor MANZ sums up at some length the result of his observations with the ophthalmoscope during the various forms of disease of the brain and its membranes. The phenomena which he had observed were hyperæmia of the optic disk, engorgement and tortuosity of the retinal veins, and optic neuritis. As the author had nothing new or of special interest to relate with reference to the last of these conditions, his remarks are confined to the former two only.

With regard to hyperæmia of the disk, meaning by that term the condition in which it appears unnaturally pink, in consequence of overfulness of its arterial capillaries, he has come to the conclusion that it is an uncertain and a most unreliable symptom; and his reasons for doing so are probably sufficient. It can be shown that the colour or tint of the disk may be materially modified by the state of the circulation within the carotid vessels, quite independently of any general hyperæmia of the cerebral contents; and the peculiarity of the arrangement of the bloodvessels around the entrance of the optic nerve, by which a communication is established between the retinal vessels and those of the choroid, explains the occurrence of hyperæmia of the disk in cases where there is only a disturbance of the choroidal circulation, and where there is no reason whatever to suspect any intracranial mischief. It is highly probable, then, that the colour of the disk may change frequently in the same eye at different times; and as the variation may arise in several ways, it is obvious that hyperæmia of the disk can be no very certain index of a similar condition within the brain or its envelopes.

The engorgement of the retinal veins, however, in Professor Manz's opinion, is much more indicative of serious mischief. In the majority of instances the venous congestion was seen to be associated with a hazy and apparently œdematous condition of the retina to some extent; these conditions, when combined, may be regarded as pathognomonic of some interference with the cerebral circulation; but in many instances it is uncertain whether the veins are engorged or not, as they no doubt vary in size in the same individual. It might be supposed that the appearance of the retinal vessels would be materially influenced by the condition of the circulation generally, but Manz has not found this to be the case in the eyes of those who have come under his observation; he has not, for instance, found it so in the eyes of those who have been extremely anæmic or chlorotic, nor in the eyes of epileptics. He believes that the venous congestion and the opacity of the retina may be explained on the assumption that there has been some impediment to the circulation through the lymphatics, and that the lymph-canals, which are formed by the sheaths of the optic nerve, and which, according to the researches of Schwalbe, communicate on the one hand with the lymphatic spaces within the eyeball, and on the other hand with the subarachnoid spaces, become distended with fluid, and increased in size so as to press upon the surrounding veins, and to prevent the free escape of the venous blood from the retina and from the optic nerve. It was admitted on all hands that the explanation was plausible, and so far true in that this distension of the sheath of the nerve could occur; but it was urged at the same time that it was almost impossible to say when this distension had or had not occurred, and the *post-mortem* examinations which had as yet been made with reference to this point, had not determined what was the normal size or capacity of the lymph-spaces in question.—*London Med. Record*, May 12, 1875.

53. *Ophthalmoscopic Examination in Cerebral Disease in Children.*—In the *Jahrbuch für Kinderheilkunde*, Dr. L. HEINZEL contributes a series of observations on the diagnostic value of ophthalmoscopic examination in cases of intracranial disease in children. His conclusions are based upon a tabulated

series of sixty-three cases; and though he confesses that he is unable to bring forward any general principle of positive value, yet he believes that they furnish negative evidence of some importance.

In forty-seven of the sixty-three cases of intracranial disease, a morbid condition of the fundus oculi was ascertained by the ophthalmoscope; in sixteen cases there was no optic disease. Of the forty-seven, eighteen were cases of neuro-retinitis; thirteen of neuro-retinitis and papillary engorgement; four of congestion of the optic nerve; four of optic neuritis and papillary engorgement; two of atrophy of the optic nerve (consecutive); and six of atrophy of the optic nerve (genuine).

In thirty-one cases of tubercular meningitis of the base, it was observed that neuro-retinitis occurred in fifteen, neuro-retinitis with papillary engorgement in five, congestion of the optic nerve in four, commencing atrophy in two, genuine atrophy in one, and the condition was normal in four.

In ten cases of acute tuberculosis, where other organs were affected with tubercle, neuro-retinitis occurred in three, optic neuritis with papillary engorgement in one, atrophy of the optic nerve in three, and normal condition in three.

In fourteen cases of tumours of the brain, neuro-retinitis occurred in five, neuro-retinitis and subsequent atrophy in two, genuine atrophy in four, and normal condition in three.

In two cases of œdema of the brain the optic nerves were congested. The condition of the ophthalmic nerve was normal in two cases of œdema of the meninges, with chronic hydrocephalus; in one of œdema of the meninges and phthisis pulmonalis; in one of hyperæmia of the meninges; in one of sclerosis cerebri; in one of cerebro-spinal meningitis, and in one of hydrorrhachis.
—*London Med. Record*, April 7, 1875.

54. *Sympathetic Ophthalmia after Cataract Operations*.—A short paper by Dr. KLEIN, of Vienna, appears in the February number of the *Monatsblätter*, as part of the proceedings of the Ophthalmological Congress (1874), in which he narrates the particulars of two cases of sympathetic ophthalmia which had occurred in his own practice subsequent to an operation for cataract; until this time he knew of but a few such instances on record, which had been described by Arit, Critchett, and Schweigger. An important result of the discussion which ensued amongst the members of the congress was to elicit the fact that no less than sixteen such cases had been observed. In the first of Klein's cases, the operation for extraction had been attended by considerable prolapse of the iris, which gave a good deal of pain and was consequently excised. Some weeks afterwards, the vision of the other eye became impaired, and an attack of iridocyclitis soon developed itself, in order to combat which the removal of the offending eye was proposed, but the patient declined to submit to any further operation. The second case was that of a middle-aged woman, who had a complete cataract in one eye, which was operated upon, and an incomplete cataract in the other. The operation appeared in every way satisfactory; but, as in the other case, it was followed by a prolapse, and in the course of a short time by iritis in the other eye. Enucleation was recommended, but was declined; iridectomy was performed in both eyes, but without any good result; the pupil became obstructed by adhesions; the eyes became soft, and vision was reduced to mere quantitative perception of light.

In Klein's opinion, the prolapse and strangulation of the iris originated the sympathetic mischief in the sound eyes of his two patients, but the opinion of other and distinguished members of the congress was not altogether in favour of such a view. It was urged that if it were so, we should expect to see sympathetic inflammation a frequent result of leucoma adhærens, which it is not; and especially should we expect it after the performance of iridodesis, an operation in which a portion of iris is intentionally strangled in the margin of the cornea—very near to the ciliary region. It was demonstrated also that it had occurred after operations which had been attended by no prolapse whatever, and in these instances it was thought probable that the section had been carried too far within the ciliary region. But there were still other cases in which it was evident that no fault could be found with the extent or with the position

of the section, and in these it would appear that the dragging upon the ciliary region, which was caused and maintained by contraction of the opaque capsule, had been sufficient to originate an inflammation resulting in the destruction of the other eye. The president might well say that such an array of facts tended strongly to support the opinion of those, who declined to operate for cataract while the other eye was yet unimpaired.—*London Medical Record*, May 12, 1875.

55. *Some Peculiar Symptoms connected with Obstructions of the Lachrymal Puncta, Canaliculi, and Nasal Canals.*—Dr. C. E. FITZGERALD drew the attention of the Surgical Society of Ireland (March 19th) to the desirability of careful examination of the lachrymal passages in the various forms of ophthalmia. This is not at all fully treated of in any standard English work on ophthalmology, and he believes in no foreign text-book except Galezowski's treatise on diseases of the eye. That author states that even slight obstructions of the lachrymal passages are frequently accompanied by symptoms which may assume a grave aspect. Dr. Fitzgerald's experience confirms this assertion, and convinces him that these symptoms have hitherto been ascribed either to the special affections they simulate or to some general constitutional disturbance, or the patient has been regarded as a hypochondriac. According to Galezowski these obstructions may produce a special form of conjunctivitis, termed by him lachrymal conjunctivitis, characterized by its gradual and insidious invasion, and a peculiar vesicular eruption on the palpebral conjunctiva. Suppurative keratitis and blepharitis may be a further consequence. The most remarkable consequence, however, is the appearance of a train of symptoms exactly resembling those which mark the presence of asthenopia, viz., inability to use the eyes for any close work, such as reading or needlework, without experiencing intense uneasiness in and around the eyes, and in aggravated cases pain in the eyes and across the brows. If the eyes be still applied to close work the sight becomes confused and clouded. The symptoms are greatly aggravated by artificial light. Photophobia is frequently added, and in one case observed by Dr. Fitzgerald was so intense that the patient had to use an eyeshade and sit with her back to the light. Lachrymation is seldom, if at all, complained of, and in the most aggravated cases it is exceptional to find it. The obstruction may occur in the puncta, canaliculi, or nasal canals. The puncta may be narrowed, and are sometimes so small that it is difficult to introduce Bowman's small director, or the very fine silver probe of Anel's syringe. When the obstruction is in the nasal canal it is probably owing to thickening of the mucous membrane. Dr. Fitzgerald confessed his inability to account for the manner in which the symptoms are produced. Gelowski attributes them to the irritative action of the tears lodged in the *cul de sac*, and says that they change from neutral to a distinctly alkaline state. The treatment obviously consists in removing the obstruction. Dr. Fitzgerald injects water through the lower canaliculus by means of Anel's syringe. If there be an obstruction in the nasal canal the water returns through the upper puncture and fills the conjunctival *cul-de-sac*. The syringe not only thus aids in diagnosis, but often overcomes the obstruction in mild cases. It may be better, on the whole, to slit up the canaliculi, for then if the symptoms persist the nasal canal can easily be catheterized. Conjunctival irritation may be treated with a mild astringent lotion. Dr. Fitzgerald narrated three cases illustrating this peculiar affection. In the first, syringing the lachrymal passages proved of some benefit; the canaliculi were slit up, and both nasal canals found obstructed; after being some time under treatment the patient was enabled to work by gas and lamplight, and expressed himself surprised at the improvement. In the second case, syringing the lachrymal passages for some time enabled the patient to read with ease and comfort without glasses, which had been previously required. The third case experienced no relief from the syringe. Photophobia afterwards set in, and slitting up the canaliculi proved satisfactory.—*Irish Hospital Gazette*, April 15, 1875.

MIDWIFERY AND GYNÆCOLOGY.

56. *Ovulation without Menstruation*.—Dr. JAMES YOUNG mentioned at the Obstetrical Society of Edinburgh the following interesting case illustrative of this: Mrs. W. was married on the 13th of June, 1867, at the age of 25 years. She menstruated on the 13th of July, and her first child was born 4th April, 1868. The patient states that she nursed the child thirteen months, and then menstruated six times—till November, 1869. The second child was born on 15th of August, 1870, nursed five months, when the baby died. From November, 1869, till the present time, January, 1875, the patient has never menstruated, and during that period a third child was born 31st October, 1871, and a fourth child was born on 12th September, 1873, and now a fifth pregnancy is going on, each child having been nursed twelve months.—*Ed. Med. Journ.*, March, 1875.

57. *The Physiology of the Menopause*.—The period of the cessation of the menopause is very variable. Dr. COHNSTEIN, of Berlin, states that, according to his statistics, the age varies from 25 to 59. It occurs mostly between 43 and 49, the average being 46.36. The usual duration is 28 to 34 years, or, on the average, 31 years. It stops suddenly in 24 per cent., gradually in 76 per cent. Early or late occurrence of menstruation does not seem to alter the age at which it ceases, so that those who begin to menstruate early have a longer, or those who begin late a shorter duration. Certain other conditions seem to affect the duration of the menstrual period. Those who have menstruated early, who have married, who have borne more than three children, who have suckled their children, and who have borne a child at the age of from 38 to 42, seem to have the longest duration of the menstrual period.—*Glasgow Med. Journ.*, Jan. 1875, from *Virchow's Archiv*, vol. lxi. Part I.

58. *Novel Treatment of Obstinate Vomiting in Pregnancy*.—Dr. EDWARD COPEMAN recommends (*Brit. Med. Journ.*, May 15, 1875) the dilation of the os uteri in those cases of intractable vomiting of pregnancy which threaten life, and reports three cases in which he successfully resorted to it, one of these we quote.

"I was called some distance into the country to consult about another case of vomiting during pregnancy of great urgency, occurring about the second month. The surgeon in attendance had adopted the best acknowledged medical treatment, and had arrived at the conclusion that artificial delivery would be necessary to save her life. With the full recollection of the former case, I examined the uterus, and found some degree of anteversion and the os patent enough to admit the end of my finger. I forthwith dilated it as much as I could, passing my finger all around, removing all puckering and making a smooth edge. She vomited only once slightly after this proceeding, and we left her with the understanding that, if the sickness continued, I should be summoned again in a few days to bring on abortion. This summons never came; but in about a fortnight I had a letter from the husband, stating that his wife began to get better an hour or two after I left, and that the sickness had entirely ceased. I have heard several times since that the patient is going on remarkably well, and I believe she expects to be confined some time this month."

59. *Efficacy of Blood-Letting in the Obstinate Vomiting of Pregnancy*.—In a letter addressed to Professor Courty (*Archives Générales de Médecine*, January, 1875) Dr. DAX calls attention to a mode of treatment suggested in a periodical called *Agenda-Formulaire*, for 1874, under the head of vomiting; cauterization of the cervix (?), induction of abortion (?).

Because pregnancy is the cause of the sickness, its arrest, it is said, cures the disease. In other words, to save the mother kill the child. As this manual is chiefly consulted by young practitioners, Dr. Dax warns against the adoption of the precept by inexperienced beginners, both on the score of its

criminality and its danger, and advises in its stead bleeding; and in doing so, reviews the various opinions of this mode of treatment, held by several leading authorities.

M. Dax gives a brief account of the results of five personal observations.

1. In 1844, a lady, pregnant for the first time, at the third month suffered from continued vomiting and nausea, which nothing relieved. She was bled to about three and a quarter ounces, and kept in a horizontal position for a couple of days and on a spare fluid diet. By the third day she was up and about; could eat well, and the sickness entirely disappeared. She was delivered at full term.

2. Madame P. (1855), who believed herself six weeks pregnant, vomited up to midday; less in the evening, and sometimes not at all. Treatment for fifteen days with anodynes, enemata, etc., made her worse rather than better. She was of an exceedingly nervous temperament, and was with difficulty persuaded to be bled. She was treated as in the previous case. On the fourth day she got up, and did not vomit again.

3. In October, 1863, M. Dax was consulted in the case of a primipara pregnant four months, who had not ceased from vomiting since the commencement. She was attenuated, pale, thin, feeble, and very nervous. M. Dax advised repose, pastilles de Vichy, etc., with no amelioration at the end of eight days. Opium was ordered to be given, and the same treatment continued. She was no better, but vomited everything, and was anæmic to the highest degree. She was bled to between three and four ounces. The same after-treatment was followed as in No. 1. By the third day there was slight retching; no food was returned. From this day she could get up, and all vomiting ceased. She went her full term.

4. Madame S. (1872), a multipara, pregnant three months, had miscarried previously at seven months. When seen she was very pale and very thin, suffered in the kidneys, was continually sick, and had no sleep. She was ordered to bed without benefit. She was bled to the extent of about three ounces and a half, vomited no more, and was able to sleep two hours. At the end of fifteen days she could get up, walk, sleep, and eat. She had no return of the sickness, and was confined at full term.

5. In September 18, 1874, M. Dax saw Madame Ch., who suffered from the kidneys. She had borne once, and was pregnant between three and four months. She was continually sick. He took away about three ounces and a half of blood, and advised rest in bed and a spare diet. No sickness returned. What was most remarkable was, that the ascitic fluid, which was considerable in the peritoneal cavity, entirely disappeared, and the patient, he was led to believe, continued well, and gestation proceeded normally.

In Case 3, the peril to mother and child was extreme. The danger to mother and child by this treatment is imaginary—it saves both.

In conclusion, the author remarks that, although he believes he has conclusively proved the efficacy of bleeding, still he advises the trial of the ordinary remedies—ice, opium, effervescing drinks, baths, change of air, exercise or rest, choice of diet, and all the other known hygienic and therapeutic agents; these in many cases suffice, but in extreme instances no remedy is so powerful as bleeding.—*London Med. Record*, March 24, 1875.

60. *Central Rupture of the Perineum*.—Dr. WILSON communicated to the Obstetrical Society of Edinburgh the following case of this accident:—

April 3, 1874, about 10 A. M., he was called to attend a lady, æt. 26, in her first confinement. She had had more or less severe pains in the abdomen since 3 A. M., and, on examination per vaginam, he “found the os uteri hardly admitted the point of the finger, while the vaginal surface was free from secretion. I ordered her a dose of castor oil, and asked the person in attendance to send for me when she thought it necessary. I was sent for about 4 P. M., and on my arrival found the pains very constant and severe, the membranes ruptured, and the head pressing strongly against the perineum, with a rigid vulva. At once I supported the perineum with my hand, and for nearly an hour continued to do so, the vulva in the interval becoming greatly relaxed. The head

was now so far protruded, that I expected its exit each pain, but suddenly the perineum became thinned, gave way, and the head, receding from the vulva, escaped through the laceration, followed immediately by the body. I separated the child, passed the fingers through the vulva, and in a short time removed the placenta by the natural way. On examining the parts, the fourchette and sphincter ani were found entire.

In the evening I wrote Dr. Matthews Duncan asking his advice as to what should be done; but after thinking over the case, I resolved to bring the parts into apposition by means of the quilled suture, and, with the assistance of my friend Dr. Duncanson, did so next morning.

The ordinary precautions in such cases were taken, and everything seemed to be going on well, till the Tuesday morning, when, to my great disappointment, the wound was found to be partly gaping; the patient, having been restless during the night, caused the looped end of the wires to slip from off the quill.

The surface of the lacerated wound being in a sloughy state, I ordered poultices containing carbolic acid to be applied for a few days; then stuffed the wound daily with lint, soaked in carbolic oil, and in three weeks after the day of her confinement the wound was entirely healed, the perineum being very slightly puckered.—*Ed. Med. Journ.*, April, 1875.

61. *Cæsarean Operation*.—Dr. CAZIN, of Boulogne, communicated to the French Academy of Medicine (May 11, 1875) a case of Cæsarean operation rendered necessary by a fibrous tumour of the uterus and which was followed by success for both mother and infant. Some months afterwards Dr. C. examined the woman and found a very notable diminution in the size of the fibrous tumour.—*Gazette Hebdom.*, 14 May, 1875.

62. *Chloral in Obstetric Practice*.—Dr. CHIARLEONI narrates the results of the employment of chloral in the Obstetrical Clinic of St. Catherine Hospital, Milan. He divides the patients to whom it was administered into four groups. The first of these consisted of pusillanimous, indocile, irritable, and nervous women, in whom the course of labour easily becomes interrupted or suspended. By administering to these subjects a substance which, while it leaves the uterine irritability intact, procures sleep, tranquillity, and diminution of pain, great benefit results. Chloral was given to twenty such cases, most of them being primiparæ, whom the novelty of their situation rendered more apprehensive and desponding. In most of the pluriparæ the waters had been discharged prematurely, or their strength was defective. In such persons the sound sleep which is produced is followed either by a vigorous uterine contraction or a diminution of suffering. Under the action of the chloral the uterine contractions acquired greater strength, while the diminution of general sensibility was not carried to the point of suspending the auxiliary pain derived from voluntary effort, which the woman brought more into action when she suffered less pain, exemplifying what has been said of chloral: that under its action the process of labour is of shorter duration.

A second group of cases was formed of women the subjects of albuminuria, verified either during pregnancy or shortly before labour. In these, chloral was indicated not only on account of the reasons prevailing in the other group, but also in relation to the prevention of convulsive action. There were nine of these patients, in four of whom labour occurred prematurely. Chloral was administered in five cases, and in none of these did any convulsive affection occur. In a tenth case in which the albuminuria was not observed until eclampsia occurred, chloral was the only remedy employed: fourteen grammes were given within the twenty-four hours. The convulsions were definitely arrested, and labour took place during the chloralic sleep. In the third group, chloral was given in five cases in order to render operations that were necessary more easy and less painful. The fourth and most numerous group was composed of women to whom chloral was given soon after the termination of labour, the patients having either been the subjects of operation or suffering exhaustion from prolonged or painful operations.

Administered during labour, chloral did not prevent its progress, nor did it act prejudicially on the fœtus. It always produced a diminution, and sometimes almost a complete suppression of pain, the sleep which resulted being calm and reparative—nearly resembling, in fact, natural sleep—lasting from one to five or more hours, according to the dose and the individual, and disappearing without leaving any heaviness of the head or disturbance of the intellect. In some cases, however, there was on waking, or even before falling to sleep, some talkativeness, or even a state approaching alcoholic intoxication. The formula generally adopted and always freshly prepared, was—chloral 6 grammes, syrup 60, and water 100—a spoonful to be taken every ten minutes until the effect was produced; but when it was deemed necessary to administer a larger quantity at once, four grammes of chloral were dissolved in sixty of water, and administered as an enema in two portions, with at least an hour interval. Upon the whole, the reporter regards chloral as a far preferable agent in obstetrical practice to chloroform, being easy of administration, efficacious in diminishing suffering, while not arresting uterine action, and in no wise dangerous either to the mother or fœtus.—*Med. Times and Gaz.*, March 13, 1875, from *Gazzetta Medica Italiana-Lombardia*, Feb. 6, 1875.

63. *Intra-Uterine Amputation*.—Dr. MACAN communicated to the Dublin Obstetrical Society a case of spontaneous amputation of the left forearm of a fœtus in utero, which occurred in the Rotundo Hospital. The child, a healthy boy, was delivered after an easy labour. At birth it was at once thought that the left forearm was entirely wanting. From the appearance of the end of the stump, it was plain that it was not a case of arrest of development, but of spontaneous amputation; and though the missing portion of the limb was carefully looked for, it could not be found.

The woman had had five children, who were all strong and well formed; she enjoyed good health during this pregnancy, which differed in no way, that she could remember, from any of her previous ones.

On examining the limb more carefully, it was found that the seat of the amputation was not through the elbow-joint, as had at first been supposed, but through the forearm, just below the insertion of the biceps. On the surface of the stump there was a semicircular cicatrix, about the size of a threepenny piece, which had evidently been a long time healed. Just beneath this, but not adherent to it, could be felt the end of a small bone. When this short stump was flexed by the action of the biceps, the effect was as though the arm itself was suddenly shortened, and its end flattened out. When the arm was flexed, the olecranon process could easily be made out posteriorly.

Dr. KIDD said he had seen four cases of this condition. In one of these, at the Coombe Hospital, the child died soon after birth. In that case he was fortunate enough to find the limb. One leg was amputated midway between the ankle and the knee. I was not present at the birth, but when I paid my visit in the morning I succeeded in getting the membranes; and, searching carefully in them, I found the amputated extremity. The other leg was partially amputated, and there was no evidence how the amputation had taken place. In one hand a fine band passed from the top of the index finger, partly enclosed the middle finger, and attached it to the ring finger. It had very nearly cut off the top of the middle finger, and some of the fingers of the other hand had the same kind of bands attached to them. We have the preparations still in the hospital.—*Dublin Journ. Med. Sci.*, Jan. 1875.

64. *Inoculation with the Septic Lochia of Puerperal Women*.—Dr. WM. STEWART relates (*British Med. Journ.*, April 17) two very interesting cases of this.

The subject of the first was a delicate woman, æt. 52, who applied to Dr. S. for an excruciating pain in the right forefinger, which was so agonizing that Dr. S. asked her whether she had not scratched or injured it in any manner, "when she informed me she had very slightly scratched that finger and the one next to it a few days previously. Upon remarking further that I was afraid she had received some poisonous matter into the scratch, she then remembered

having given an injection to a lying-in woman on the evening of the 6th (about thirty-six hours before my visit), whose nurse was very inexperienced, and had neglected to change the patient for several days after delivery. I was informed by the medical gentleman in attendance upon the confinement, that his patient had peritonitis at the time. My patient had wrapped a piece of adhesive plaster round the middle finger, which was therefore quite unaffected, but unfortunately had left the scratch on the forefinger totally unprotected. Here, then, was the clue to the case, decomposing lochial discharge applied to the recent scratch. This case ran a most acute and rapid course. Thirty-six hours after the application of the septic matter, I saw the patient. The finger was then hard and indurated, but not much swollen. The back of the hand was very red and much enlarged. The inflamed lymphatics in red streaks could be seen passing up the forearm; and in twelve hours more, in spite of all measures adopted to arrest the advancing disease, the finger had mortified. . . . The gangrene continuing to spread soon involved the other fingers, hand, and wrist, and was followed by a fatal termination on the 10th, being ninety hours from the application of the poison, and about forty-eight hours from the time when I first saw the case. Throughout the short course of her illness, the general symptoms were those of high fever, persistent vomiting, and, towards the close, delirium."

The subject of the second case was the mother of Mrs. L., a primipara. Three days after her delivery "symptoms of acute peritonitis set in, preceded by decomposition of the lochia, and accompanied by profuse diarrhoea, and other symptoms of blood poisoning. Injections of Condy's fluid into the uterus and vagina were used to disinfect the discharge. These were administered by her mother, who two days before her daughter's death had inflicted a slight wound with a table knife over the first joint of her left thumb. The wound being slight, she did not consider it necessary to mention it, or to apply any dressing to the part, but continued to administer the injections without any protection to the thumb. On the 7th, I found her suffering from most violent pain in the thumb, which was swollen and indurated; the wound was gaping and sloughy in appearance, the back of the hand red, shining, and erysipelatous. A free incision on the thumb above the wound, followed in a few days by another on the back of the hand, gave exit to a large quantity of pus, and relieved, to a certain extent, the severity of the symptoms; but the purulent affection seemed to travel along the cellular tissue of the forearm, which in turn had to be relieved by incision. The lymphatics were inflamed as high as the elbow, where there was a patch of erysipelas. This case terminated favourably in six weeks, leaving only the first joint of the thumb stiff.

"These cases appear to me to be specially instructive; first, because of the danger to which attendants are exposed when it becomes necessary to give vaginal injections to puerperal patients. And I think it becomes the duty of the medical attendant to warn the nurses to take precautions not to allow the discharge to come into contact with any recent wound or abrasion of skin. Secondly, they are exceedingly interesting from their tendency to throw light upon the nature and production of puerperal septicæmia, as they show that the application of decomposing lochia alone to a recent scratch or wound has been sufficient of itself to produce gangrene of the part and death of the patient in the one case, and a very severe attack of phlegmonous erysipelas in the other, although no puerperal condition existed in either of the inoculated subjects. I think we may, therefore, draw the conclusion, that the passage of decomposing lochia over any abraded surface in the vaginal passage is sufficient to produce puerperal septicæmia without the importation of any other specific poison. In this manner, we may account for the disease attacking much more frequently primiparous cases, as the vagina and perineum are much more likely to be slightly lacerated in those than in multiparæ."

65. *United Twin Monstrosity*.—Dr. G. P. HADLEY records (*British Medical Journal*, April 17) the following case.

"March 23d, about 8.45 A.M., I was called to Mrs. B., who was in labour with her fourth child. She had been all night in pain, and at my arrival the

head presented at the brim in the first position. The membranes were unruptured, and the os dilatable. On rupturing the membranes, the head slowly descended, but, to my surprise, remained for about two hours and a half on the perineum, although the pains were severe, and her previous labours had been very easy. As the head seemed as though it would never pass the perineum, I pushed it and the soft parts of the mother back over the head, which emerged with the face to the sacrum in the usual way. The head being thus born, the fingers could be easily placed round the neck, and any justifiable amount of traction used; but the body refused to descend even in the least degree. However, after a time, the head of itself rotated to the position of the occiput to the sacrum: and I found that, by forcing it directly forwards and upwards, gradually the shoulders, back, nates, and finally the feet were born. It then became evident that there was a second child attached to the abdomen of the first, thus causing this peculiar mode of delivery. The second child was born first feet, then nates, and finally vertex, in a similar way to an ordinary abdomino-anterior footling case. I thought it well to record the mode of delivery in this case, as it shows the way in which, in vertex presentations, united twins can be born; that is, by the head of the first child passing, becoming fixed against the pubic arch, and the rest of the body coming down by a natural process of version. The children were two perfect female infants, perhaps rather smaller than the average size, united in the median line by a broad band extending from the lower part of the sternum to the umbilicus, the abdomina seeming continuous. The umbilicus, cord, and placenta were single.

"Each infant had the two upper central incisors developed. The first breathed during birth, which was necessarily prolonged and difficult; the second was quite still-born."

66. *Metro-peritonitis following the use of the ordinary Female Syringe.*—Dr. THOMAS MORE MADDEN communicated (Feb. 13, 1875) to the Dublin Obstetrical Society a case of this. In the discussion to which it gave rise, Dr. LOMBE ATHILL said he did not think the occurrence of uterine colic following the injection of fluids by the syringe, was a very rare occurrence, inasmuch as he had seen three cases of it in his own practice. In one case only a few drops of glycerin were injected into the cavity of the uterus, as recommended by Dr. Marion Sims, and it produced most intense colic, but no peritonitis or endo-metritis followed. Some two years ago he was called, late at night, to see a patient whom he had directed to use a weak solution of borax injected into the vagina with an ordinary syringe. He found her in a state of collapse, suffering from pain referred to the uterus and sickness of stomach. Her symptoms were speedily relieved, and no inflammation followed; while a less severe attack occurred in a patient who used tepid water only. He thought these cases, in which the injection of a fluid into the uterus was followed by colic, were far from being of very rare occurrence, and he advised that the central hole in the nozzle of the syringe be stopped, as a means of preventing this accident.¹ He did not think, however, that the data given by Dr. Madden carried out his theory that the fluid passed into the Fallopian tubes, and thence into the peritoneum. The phenomena in Dr. Madden's case might be explained by the occurrence of a severe attack of endo-metritis in the first instance, followed by peritonitis. The exact same train of symptoms which Dr. Madden had described—the prostration, collapse, and vomiting—occurred in a patient where he (the President) had swabbed out the uterus with perchloride of iron. The patient was suffering from profuse hemorrhage, occurring some weeks after abortion; the os was patulous, and he had no difficulty in passing a pledget of cotton, saturated with the styptic, into the uterus; this

¹ [Dr. J. S. PRICE, of Frankfort, Kentucky, wrote us some months since, that, having met with two cases of severe uterine colic following vaginal injections, he was induced to have the central hole in the nozzle of the syringe closed, since which time he has never had another case of this accident. It is just to Dr. Price to state that he could hardly have known that the same expedient was resorted to by Dr. Madden.—Ed. *Am. Journ. Med. Sci.*]

was followed by a train of symptoms exactly similar to those Dr. Madden had described, but it was impossible that the fluid was passed through the Fallopian tubes. Certainly, Dr. Madden was quite right in saying that vaginal injections were not perfectly free from danger. He (the President) greatly preferred a douche, similar to that spoken of by Dr. Madden, to the use of a vaginal syringe, and he had recently (acting on a suggestion of Dr. Emmett, of New York) carried out that plan extensively. Dr. Emmett advocated strongly this vaginal irrigation with water, varying from 95° to 105° of temperature.

Dr. McCLINTOCK observed that every one who dabbled in gynæcology thought he was perfectly safe in practising vaginal injection. Dr. Madden, however, had given them another instance of what they were all familiar with, that the simplest remedies and operations, apparently the safest, will in rare and exceptional cases prove highly injurious or even dangerous to life; and instances might be given where even a small incision had been followed by death. But the occurrence of such rare instances ought not to deter us from the use of any remedy, whether surgical or therapeutical. They could not speak positively as to the cause of the alarming symptoms described by Dr. Madden. They never could know whether any of the fluid went into the cavity of the uterus or not. All they could say was that such was possible, and, in Dr. Madden's case, the circumstances were highly favourable for the entrance of the fluid into the uterine cavity, as the lady had only been three weeks confined, the os was patulous, and the uterus prolapsed. Hitherto he (Dr. McClintock) had been in the habit of telling his patients that they might use the syringe freely, and that it could not do any possible harm; but now he saw such a direction would not be always a safe one. He had seen sharp pain follow an injection, but no serious consequences. He could quite understand that when the injection was introduced cold it might be injurious, and he had generally told his patients to use it tepid and gradually reduce the temperature. He had an opportunity of seeing the case which Dr. Madden had brought under their notice, and he agreed in Dr. Madden's diagnosis. There was no doubt whatever but that she had a dangerous attack of metro-peritonitis following the use of the injection, and evidently produced by it. The case was, therefore, very striking and remarkable, and should be kept before their recollection.—*Dublin Journ. Med. Science*, March, 1875.

67. *Fibro-cystic Tumours of the Uterus*.—Dr. THOMAS KEITH, the skilful Edinburgh ovariologist, records (*Lancet*, May 15, 1875) three cases of successful removal of fibro-cystic tumours of the uterus.

He remarks that "In the first of these three cases there was a mistake of diagnosis as to the nature of the tumour. It is the only one of 194 operations. Hitherto I had the good fortune to avoid cases of soft fibrous and fibro-cystic tumours of the uterus. But as it has happened to all who have performed ovariectomy many times to come down upon a fibro-cystic tumour of the uterus instead of an ovarian tumour, I knew that I could not always escape; and for many years I have never gone to perform ovariectomy without being at the same time prepared to remove the uterus if necessary. Fortunately in this case the surgical treatment required was the same, for large fibro-cystic tumours of the uterus often kill as rapidly as do ovarian tumours.

"These are the only cases in which I have interfered with uterine tumours by abdominal section. They are, however, enough to satisfy me that the removal of an enlarged uterus and ovaries is an operation not to be lightly undertaken. Without the knowledge that ovariectomy has given me, the results would probably have been different. Even as it was, in the second case the hemorrhage was so profuse that the patient was pulseless in a few minutes after the operation was begun. The personal attention afterwards necessary was, in each, greater than in half a dozen average cases of ovariectomy; while the third had such profuse secondary hemorrhage seven days after operation, that had I not, by mere accident, been on the spot almost immediately after the alarm was given, the patient must have died in a few minutes.

"During the last twelve or fourteen years, I need hardly say, a large number

of uterine tumours of all kinds have passed through my hands; and the advice hitherto given has been to let them alone, either because interference was unnecessary or because their removal was too dangerous. Of course I do not allude to submucous tumours that could be reached by the vagina. I might have removed scores of pedicellated fibroids which, surgically speaking, were very tempting; but in these, nothing but almost absolute safety of operation could have justified interference, and they were all declined, though I was often pressed hard to operate. The melancholy results that have hitherto followed the performance of this operation amongst us forbade interference, even when necessary, under the most favourable circumstances, far more in those dangerous cases of large, quickly growing, soft fibroids or fibro-cysts. Though the greater number of uterine tumours—if not malignant—give little trouble, rarely interfering with life, and often not even with the comfort of the patient, yet in a certain number they cause the subjects of them to lead useless, dependent, miserable lives, full of suffering, ending only with life. I hope the time is not far distant when many of these unfortunates will look to surgery for relief with as much confidence as those afflicted with ovarian disease now do.”

68. *Cancer of the Ovary*.—Dr. FOULIS read a paper on this subject before the Medico-Chirurgical Society of Edinburgh, which forms a valuable contribution to the diagnosis of morbid growths. After noticing the researches of Waldeyer on the development of the ova and ovary, he stated shortly his own investigations on the development of the ovary and Graafian follicles.

In the human foetal ovary he had been able to trace that, by the growth of processes of stroma up between the germ epithelial corpuscles, large and small masses of the latter become embedded in the stroma of the ovary in the manner described by Waldeyer. All the embedded corpuscles are potentially ova, though many of them never reach that stage of development. The stroma of a seven months' human foetal ovary consists almost entirely of connective tissue corpuscles. Little processes of the stroma made up of such corpuscles grow in between the embedded ovigerms, and as the latter become conspicuous by their size, the processes thicken between them, and at last each young ovum is gradually shut up in a separate mesh or Graafian follicle. The epithelium of the follicles or tunica granulosa is produced in the following way. As each young ovum becomes inclosed in a mesh of the stroma in the way just described, connective tissue corpuscles in the walls of these primordial follicles lie in close contact with the protoplasm or yolk substance which is produced round the germinal vesicle of each ovum during its development. The nuclei of these connective tissue corpuscles swell up, and by constant division at last produce a perfect capsule round the ovum, consisting of small cells. In all parts of the ovary, wherever germ epithelial cells are developing into ova, connective tissue corpuscles are found lying in close contact with their protoplasm or yolk substance, and the nuclei of these corpuscles swell up, and by constantly dividing, produce the small cells which constitute the follicular epithelium or tunica granulosa of the Graafian follicles. Dr. Foulis thus shows that, while all the ova are derived from the germ epithelium corpuscles, the follicular epithelial cells are part of the stroma, and are derived from connective tissue corpuscles in the stroma of the ovary. At birth the human ovary contains not less than 30,000 Graafian follicles, and the epithelium cells of these are produced by the proliferation of connective tissue corpuscles in the stroma of the organ.

As the result of many investigations which he has made on the development of cystic tumours of the ovary, Dr. Foulis is of the opinion that although, in most cases, over-distension of Graafian follicles is the starting point of cystic tumours of the ovary, when the disease has once started, there is a formation of new cysts in the diseased organ which may go on to an unlimited extent. He has carefully traced the development of small cysts, often found in great numbers in the walls of parent cysts, and he believes that the epithelium of these little cysts is produced by the proliferation of connective tissue corpuscles in a manner very similar to that which takes place in the formation of the epithelium of healthy Graafian follicles. After stating that every cyst, how-

ever small, in the diseased ovary had a distinct epithelial lining, he read the following short notes of two cases of cancer of the ovary to show how important a part is played by the epithelium of cysts in the production of certain forms of malignant disease of the ovary. The first case was that of an Irish lady who consulted Dr. Thomas Keith early in October about a tumour of the abdomen. Dr. Keith, on examination, discovered a semi-solid tumour, larger than an adult head, surrounded by much ascitic fluid. The belly was tapped, and about two gallons of fluid tinged red were drawn off. The sediment from this was carefully examined under the microscope. On placing a drop of it on a glass slide, numerous small white bodies, varying in size from a pin's head to minute specks, were seen with the naked eye; these under the microscope were found to be little masses of epithelial cells and nuclei, proliferating in an extraordinary manner; epithelial cells in all stages of development were projecting from the little masses. From the close resemblance of these cells to the cells of epithelium lining young cysts of an ovarian tumour, Dr. Foulis thought the little masses were fragments of epithelium which had escaped from small burst cysts, and, floating free in the ascitic fluid, were proliferating. The patient improved much after the tapping, and ovariectomy was performed. A fungous mass the size of an egg was found growing from the wall of the pelvis on the right side, and the tumour itself was one large malignant mass. Some small burst cysts were found on the surface of the tumour, and many small cysts unbroken, and filled with large epithelial cells, were found in different parts of the tumour. In some of the cysts the epithelium was much thickened and projected in papilliform growths.

The second case was that of a woman about thirty years of age, who in September consulted Dr. Thomas Keith about a tumour in the abdomen. Dr. Keith discovered a large cystic tumour of the ovary, surrounded by a considerable quantity of ascitic fluid. The patient's right pleural cavity was filled with fluid. Dr. Keith first tapped the abdomen, and three days after this drew off from the right chest 127 oz. of serum. A microscopic examination of the ascitic fluid showed a large quantity of cells and free nuclei from the cysts of the ovarian tumour. On the 3d October, Dr. Keith again drew off from the abdomen 32 lbs. of fluid. The deposit from this was carefully examined. With the naked eye many small white bodies were seen, and these under the microscope were found to be little masses of proliferating epithelium, similar to those found in the Irish lady's case. On the 27th November the abdomen was again tapped, and the fluid emptied into a large foot-pan. In the course of a couple of hours the deposit was an inch thick, and, without exaggeration, half of the deposit consisted of these little masses of sprouting epithelium, they had increased so enormously in quantity! At this time, patient was remarkably well in health, and on being asked as to the state of her health, always replied cheerfully, "Oh, I feel quite well!" She showed no signs externally of internal malignant disease. From the experience we had gained by the Irish lady's case, Dr. Keith made up his mind that this was not a case for operation. The patient soon went home to Perth, and on 28th December died suddenly. Through the great kindness of Dr. Absolom, of Perth, who performed a most careful examination of the body, I received an account of the condition of the abdomen, and also the whole tumour. The peritoneal surface everywhere was studded with small white nodules of a malignant nature. The tumour weighed about 12 lbs., and was of the right ovary. The Fallopian tube was drawn out to the extent of 14 inches along one side of it. The mass was made up of a number of cystic growths, varying in size from a marble to a foetal head, all fused together and presenting various degrees of solidity. In all the cysts the epithelial lining was enormously thickened, in some cases to the extent of an inch and a half. The internal surface of each cyst was rough like a cauliflower growth. In the centre of the tumour was a semi-solid malignant mass the size of a child's head. In every part the tumour was found to be of a malignant nature. In bringing these two cases before the Society, the object Dr. Foulis had was to direct attention to the little masses of sprouting epithelium found in ascitic fluid surrounding a tumour in the abdomen, as a means of diagnosing malignant ovarian tumour and malignant peritonitis. Dr. Foulis has no doubt that the malignant

disease in both these cases originated in the ovary, and that the malignant condition of other parts in the abdominal cavity was caused by the dissemination of elements from the primary seat of the disease upon neighbouring parts. In the second case, it was not possible to say from the external signs that the patient was suffering from internal disease of so grave a character; and yet after death at least 10 lbs. of cancerous material was found in her abdomen. No doubt, a malignant ovarian tumour may be present in the abdomen without the presence of these little masses of sprouting epithelium in ascitic fluid, but where ascitic fluid is present, and these little bodies are found in it floating free and growing at a rapid rate, quite independently of surrounding structures, Dr. Foulis considers them to be a certain sign of malignant ovarian tumour and peritonitis.—*Ed. Med. Journ.*, March, 1875.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

69. *Poisoning by Chloral*.—An interesting case of poisoning by chloral hydrate is reported in the *Centralblatt f. d. Med. Wissenschaften*, of 3d April, 1875, as follows: A man who had taken 24 grammes (about 370 grains) of chloral hydrate was found half an hour after in a deep sleep, no more dangerous manifestations of its effects having yet developed themselves. About half an hour later, however, he began to suffer from interrupted respiration, the heart remaining normally active. Subsequently the heart's impulse became dangerously feeble, so that the pulse could only be felt in the carotid, while the face became deadly pale. The pupils were greatly contracted, and the temperature sank to $32^{\circ}.9$ ($91^{\circ}.22$ F.). Artificial respiration by means of passive motion and faradization being followed by no improvement, 0.003 grm. of strychnia was injected subcutaneously. Muscular spasm set in immediately, rapidly followed by trismus, the heart's impulse became again perceptible, the pupils enlarged, and the temperature rose to $33^{\circ}.3$ ($91^{\circ}.94$ F.). Dangerous symptoms manifesting themselves again shortly after, a second injection of 0.002 of strychnia was administered, the effects of which displayed themselves as before; the heart increased in power and the temperature rose to normal. Respiration, however, had to be excited for eight hours longer by means of the induction current. Thirty-two hours after the intoxication he awoke fresh and free from all effects, having been easily wakened on several occasions from his deep sleep for some time previously. The trismus and tetanic contractions of the muscles of the upper extremity persisted for fourteen hours after the second injection of strychnia. No gastritis followed this enormous dose of chloral, perhaps because it had been taken on a full stomach.—*Irish. Hosp. Gazette*, May 15, 1875.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Addendum to Prof. Neill's paper on Elephantiasis Arabum.

The accompanying illustration, from a drawing by Dr. E. O. Shakespeare, very faithfully represents the microscopic appearances of the skin of the scrotum in Prof. Neill's case of elephantiasis arabum described on page 114.

Owing to unavoidable delay in obtaining this illustration, it was impossible to insert it in its proper place.

Fig. 1.

Fig. 2.



Skin of Scrotum in Elephantiasis Arabum. $\times 225$ diam.

Fig. 1 shows a section of deep part of corium. *a* Bands of dense fibrous tissue, in the meshes of which are scattered numerous free nuclei, round and spindle-shaped nucleated cells. Cells occasionally with two nuclei, granules and connective tissue corpuscles. *b*. Artery-walls much thickened and infiltrated with cells. *c*. Cell mass. Complete atrophy of panniculus adiposus.

Fig. 2 shows, in vertical section, epidermal and capillary layers. *a, b*. Horny layer of epiderm partly detached. *c*. Rete mucosae. *d*. Cylindrical cells of which, much pigmented. *e*. Papillary layer, showing cell infiltration and remains of capillaries, but no trace of either hair follicles, sweat or sebaceous glands. Immediately below papillary layer are enlarged lymph spaces. *f, g, h, k*. Bloodvessels with thick fibrous walls.

Chloral Hydrate in Obstetrics. By NAT. CHAPMAN, M.D., of Glymount, Md.

It is the opinion of many obstetricians that the exhibition of chloroform in obstetrical practice enhances the probabilities of *post-partum* hemorrhage. To my mind it has another serious objection, and that is it retards the labour, not to mention the subsequent vomiting and stupor; this, too, even when a few inhalations only during paroxysms of pain are allowed. Having a patient, a multipara, with whom in her previous labours I had used chloroform, but, warned by obstinate *post-partum* hemorrhage, dared not venture to use it again, and having read Prof. Playfair's remarks upon the use of chloral hydrate in obstetrics, I determined to use it as he directs with this patient in her next confinement, which I have now done, and am so well pleased with the result that I am induced to give a brief history of the case.

Mrs. C., aged 31, mother of three children, delicate and nervous organization, was taken in labour at 2 P. M., November 9th, having had a previous false alarm two days before. The waters broke with the first pain. I was with her in a few moments; found the pains regular, every five minutes of a teasing ineffectual character, coming on suddenly, and lasting but a short while. Some writers profess to attach a peculiar indication to the last character. At 3.50 P. M., the os being dilated and dilatable, and the waters having been freely discharged in the interest of both mother and child, I gave of fluid extract ergot $\mathfrak{z}\text{j}$. The vertex could be felt at the superior strait. The ergot did not change or improve the character of the pains in the least. Repeated the dose at 5.10 P. M., without effect. Repeated the ergot in similar dose and with like result at 5.30 P. M. Having given the ergot a fair trial, and having no reason to question its purity, I determined to discontinue it and try chloral, with a view of mitigating the sufferings of the patient, as I felt certain she had a tedious labour to encounter.

Having, upon arrival, made a solution of chloral as directed by Prof. Playfair, chloral hdr. $\mathfrak{z}\text{iss}$ (90 grs.), aqua $\mathfrak{z}\text{vj}$, I gave her $\mathfrak{f}\mathfrak{z}\text{j}$ at 5.50 P. M. Repeated the dose at 6.10 P. M. In five minutes after giving the second dose, the patient ceased her complaints and loud expressions of suffering. The pains themselves changed from their ineffectual neuralgic character to expulsive and bearing down. The exact presentation could not be diagnosed until some time after the second dose.

Labour progressed rapidly and pleasantly. The patient began to complain of her sufferings, the pains preserving their character; gave $\mathfrak{z}\text{ss}$ at 6.50 P. M. All complaints stopped in two minutes. Repeated dose $\mathfrak{z}\text{ss}$ at 7.02 P. M. The head having descended to the floor of the pelvis without rotating, thereby causing some delay, had to repeat the dose $\mathfrak{z}\text{ss}$ at 7.20 P. M. The child delivered at 7.40 P. M. The third stage completed without any unpleasant results. The patient immediately dropped off into a child-like slumber, and slept for an hour, awakened and called for some nourishment, then slept the whole night, and awakened in the morning much refreshed. The patient was well pleased with the effect of the drug, and pronounces it far superior to chloroform, and equally as effectual, and begs the boon may be extended to her suffering sex. I must confess, the effect of the chloral upon the character of the pains was something I did not expect; but it was something I could not fail to observe, and I am prepared to believe that it was a "*post hoc ergo propter hoc.*"

Intra-uterine Hydrocephalus; Breech Presentation; Delivery with the Forceps. By S. B. BIBIGHAUS, M.D., of Middlebury, Pa.

I am induced to report this case, as similar ones are very rare. With the exception of the two cases presented by Dr. Corse to the College of Physicians of Philadelphia, and published in the *American Journal of the Medical Sciences* for January, 1861, and January, 1863 (delivery accomplished in both cases by ovariectomy), I know of no others, and have myself met with no other in a practice of nearly twenty years.

The above reasons, with the successful issue in my case with the forceps, induce me to place it on record.

Mrs. J. S., aged about 35 years, is the mother of three children, all living. The oldest daughter menstruated at the unusual age of six years, rendering her delicate. At the time of her birth the mother had a severe attack of convulsions, which I checked by large bleedings.

On the 23d of August, 1874, at noon, I was sent for, and found Mrs. J. S. in labour, the os dilating, and pains gradually increasing. About 3 o'clock P. M. I made another examination, and found the breech presenting. I told her husband that on this account her labour would be prolonged. The body of the infant was born about 4 o'clock P. M., with the head resting on the brim of the pelvis; discovered it to be very large; the fontanelles were of unusual size, and the space between the sutures very wide, showing that I had a serious and rare case to deal with, and, in the language of Dr. Corse, "complicating labour very much."

I gave her small portions of ergot, and putting my finger into the child's mouth, tried to bring down the head, but I was disappointed. Finding the woman becoming exhausted by the continual pains and irritation, I at once sent for my forceps, chloroform, and assistance.

At 5 o'clock the messenger and Dr. J. W. Rockerfeller arrived. I very soon brought her under the effects of the chloroform, when the long forceps were applied.

We found great difficulty in adjusting the instruments, and in preventing them from slipping off; but by persevering and powerfully compressing the head, we found, to our great relief, that the head was moving slowly. After working hard for about an hour the head was born.

I am sorry that I did not measure the head, for it would be more satisfactory; yet I do not believe it would fall far short of Dr. Corse's case.

The mother made a good recovery.

April 28, 1875.

Dysentery treated by Posture. By C. B. GALENTINE, M.D., of Cleveland, Ohio.

The horizontal or an elevated position is notably essential in the treatment of many surgical diseases, as well as those of an exclusive medical character.

For years past I had occasional attacks of dysentery, attended by that unendurable sense of congestive fulness, pain, and constant desire to sit and strain which writers most fitly denominate *tenesmus* and *tormina*. The discharge of a little blood and much mucus brings no relief, but rather an increase of the tormina.

In the midst of such suffering as only comes from an attack of dysentery, I felt that in some way the weight of the superincumbent bowels must be removed, and the current of the blood in some way be dammed up or inverted to take off the insufferable pressure from the rectum. Being

slightly under the influence of opium, as by its inspiration, I quickly changed my hips to the head of the lounge, elevating them to an angle of thirty or forty degrees above the trunk. Almost in an instant I felt relief, which was followed in a day or two by complete recovery.

In subsequent attacks it has been equally efficacious, and, as a result, has become with me a standard item of treatment.

After two years or more of experience and observation of its benefits, I can say I regard it the *chief* item of treatment in acute dysentery, and that, were I limited to one remedy, that would be the position I have indicated.

It may be thought that the position itself would be uncomfortable and poorly borne by the patient. I reply, anything is comfortable and endurable that relieves from the torments of dysentery—besides my experience indicates that the position need not be maintained any great length of time—say from one to four hours as often as the pressure or tenesmus returns. In experience during an attack recently the posture was not only *endurable*, but luxuriously enjoyable. Lay a book or a small, hard pillow under the head, leaving the hips and legs raised, and a patient never complains.

In all ordinary attacks, aided by small anodynes per rectum or per ore, I believe the treatment above indicated will be found all-sufficient, and, with me, in no supposable case can it well be ignored.

Entrance of Air into Divided Internal Jugular Veins; Ligation; Recovery. By A. B. TADLOCK, A.M., M.D., of Knoxville, Tenn.

On the 1st of February, 1875, I was summoned in great haste to see a man, two squares distant from my office, "who had his throat cut," as the informant excitedly said. I started to follow, but was delayed a few minutes. The wounded man received the injury over half a square distant, and had walked with help to the location where I found him and Dr. Stewart, who had sent for me in consultation. The patient is a coloured man, aged 30, weighs over two hundred pounds, large and fleshy, a good specimen of health, and is a blacksmith by trade. He was sitting on steps, leaning forward, with head resting on the right hand, and elbow supported on the right knee; left shoulder drawn up and head bent towards it. Dr. S. had found this position favourable to checking the flow, and was admonishing the patient to "compose himself and be quiet;" nevertheless the weakness of the pulse and exsanguine appearance indicated great loss of blood, besides, his shirt was saturated, and frightful streams still ran down his neck and chest.

With a razor in the hands of the attacking party two transverse and nearly parallel incisions had been made across the left side of the neck, four inches long and about one and a half inch apart. The upper one, ranging with the inferior maxillary, severed the skin, fascia, platysma, and sterno-cleido-mastoid muscles, the external jugular, the posterior external jugular, and anterior jugular veins, and the superior thyroid artery. The other cut began near the median line, one inch or less above the sterno-clavicular articulation, with a deep thrust, and extending across and backwards, divided the superficial parts above mentioned, together with the omo-hyoid muscle, and wounding the sterno-thyroid and trapezoid muscles, also severed the superficial cervical artery, made an opening into the trachea, and cut about half through the internal jugular vein.

Having the patient taken in immediately and placed on a lounge, I

seized with forceps the external jugular, and while Dr. S ligated it I pressed other bleeding points with my disengaged fingers. The other severed vessels above mentioned, being secured with ligatures, the most fearful bleeding was observed to issue from the inner and deepest portion of the lower cut, and on forcing open the lips of the wound the internal jugular was plainly seen spouting forth its contents at a frightful rate. The extent of the cut in the vein was visible, and while I was attempting to take it up the air unmistakably passed into the vein as was manifested by the peculiar lapping sound attending it, by the apparent dilatation of the slit, and by the sucking in of the fluids around the orifice; also by the respiratory disturbance, with struggling and importuning of the patient, which immediately followed. This happened a second time during a subsequent effort to secure the vein, for my forceps proved to be too narrow to include the entire slit, and pain following my second effort, indicated that the pneumogastric nerve was included, so that even a third trial was made before I had successful control of the hemorrhage. Each time, however, after the ingress of air and the struggling efforts of the patient, froth and bubbles of air were seen to come from the lesion in the vein. after which the patient seemed relieved, was easy and quiet, and now, although I had the vessel secure in my forceps, and the bleeding completely under control, the difficulty of ligating in a situation so narrow and deep down in the tissues was at once apparent; also the question was important whether it would be best to tie above or below by passing ligatures beneath the vessel, or to tie over the point of the forceps, thus including a loop or fold of the vein; but by trial the latter proved to be the most practicable, and was adopted. The external wounds were closed up in the usual manner, and the patient made a good recovery, the ligatures coming away on the ninth day. Besides Dr. Stewart I am indebted to J. H. Carriger, M.D., and C. Deaderick, M.D., for valuable assistance in the operation. At this writing the patient is well and has resumed work at his trade.

Case of Triplets, Excess of Liquor Amnii, and Remarkable Distension of the Abdomen of a Blighted Fœtus. By L. C. STEPHENS, M.D., of Blackville, South Carolina.

March 10, 1874, I was called to see Mrs. —, a healthy, robust lady, who had borne one healthy child, and whose accouchement was again expected about the middle of May. Found her in labour, the head of a fœtus pressing against a thick tense membrane, which was likely to prove an insurmountable barrier to the progress of delivery. As the pains were strong and regular, I decided to rupture, which was accomplished in the usual way. Almost immediately a dead fœtus of about seven months was expelled, succeeded by a perfect rush of amniotic fluid—scarcely less than a gallon. No hemorrhage. After a very brief interval the feet of another presented, and, with but little effort on the part of the uterine muscles, was expelled. Observing but little subsidence, comparatively, in the dimensions of the abdomen, I was induced to look up the cause, and my search was rewarded by finding the hand of a third presenting outside of the vulva. Attempting to make an exploratory movement, with the view of finding, securing, and bringing down the feet, I had my search suddenly brought to a termination by encountering an unexpected obstacle in the shape of an *enormous tumour*, commencing from just below the axilla, in common, apparently with the fœtus and gradually enlarging, which, after a prolonged and perplexing manipulation, I diagnosed to be

an unusual distension of the abdomen of the fœtus. Seeing no "road out of the woods," I determined to puncture this immense *sac*, which, from its fluctuation, I knew contained fluid—and which was so wedged down in the upper strait by the constant and energetic contractions of the uterus, that any effort at podalic version would prove worse than futile. With the nail of the index-finger the nondescript was punctured, and a flood of water gushed forth deluging everything. Immediately upon the subsidence of the mass, a blighted fœtus of about six months' growth, with its flabby sac, shot out. The hemorrhage in this case was not as much as would have been expected in an ordinary one, and another thing worthy of attention is, that those fœti had evidently been dead for some time before birth (the third probably a month), and still they were all of *firm* tissue, and—to use the expression of Dr. Markham of Indiana, who reported a parallel case in the *Am. Journal*, Jan. No., p. 290—of "marble whiteness."

Double Urethra in the Female. By M. LEWIS, M.D., of Lenoir, Tenn. Some months since I encountered a case of abnormal anatomy so rare, that I deem it my duty to report it.

Was called on the 22d October, 1874, to Mrs. M. L., then in confinement with her first child. The second stage was prolonged beyond the usual time by a very resisting perineum, so that the external organs of generation were considerably swollen.

On the following day, as predicted, she was unable to pass her urine, and I was accordingly summoned. On attempting to introduce the catheter, however, I completely failed. At this I was not a little astonished, as I had frequently performed this slight operation under similar circumstances with but little difficulty.

In vain every point of the vestibule, from clitoris to vagina, was carefully explored. At last, by exposing the patient, and using a strong light, two small openings were discovered, one on either side of the median line of the vestibule, and more than half an inch apart. Into the right orifice, while it easily admitted a probe, the catheter (No. 5) could not be introduced. On attempting the left meatus, however, it was readily passed, and the urine drawn off.

Her mother, who had witnessed the entire proceedings, then took me aside, and volunteered the following statement: Shortly after birth her daughter was unable to pass her urine, and consequently underwent an operation, by which she was relieved. No further information, however, could be obtained on the subject, and the physician who operated has long been dead.

DOMESTIC SUMMARY.

Cold in the Head.—Prof. HENRY J. BIGELOW of Boston calls attention (*Boston Med. and Surgical Journal*, April 29, 1875) to the fact that the turbinated bones are imbedded in erectile corpora carvenosa, which affords a simple and satisfactory explanation of the every-day phenomena of a "cold in the head."

"Many years ago," he states, "while examining for operation the cleft palate of a patient who happened to have a catarrh, I was attracted by the excessive turgescence of the mucous membrane on and above the inferior turbinated

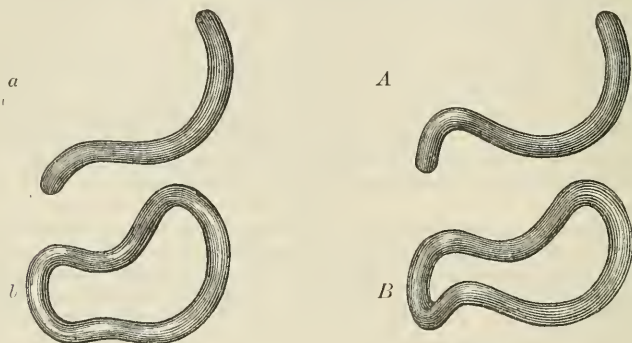
bone; but yet more, when it suddenly collapsed like the lung of a small animal. Remarking then to an assistant that this phenomenon was much more suggestive of the action of erectile tissue than of merely vascular congestion, I have since not unfrequently ventured to tell some suffering doctor that he would find upon the inferior turbinated bone an erectile tissue to elucidate, if it did not alleviate, his symptoms. Having, during the last year, examined the tissue in question, I have been able myself to identify a remarkable and well-formed cavernous structure, at least upon the inferior and middle turbinated bones.

"The difference in the size of the distended and collapsed cavernous bodies is quite striking, and is best seen upon the inferior turbinated bone. Collapsed, the outline and dimensions are nearly those of its attenuated bony framework. Distended, it becomes an angry, turgid mass, of uneven surface and livid color, completely closing the lower nostril. A pouch-like process projects from the rear of the bone, increasing its length, and with the aid of a blowpipe readily showing on section, to the naked eye, the cavernous cells. It is this reticulated pouch that is seen with the mirror at the back of the nares. Above it, is seen the middle turbinated mass, similarly distended; and if the injection of the whole membrane is considerable, the nasal septum also swells to the thickness of nearly one-quarter of an inch, especially near its posterior edge. With a little mucus in the interstices, the nostril is thus completely obstructed, the opposing surfaces doubtless producing by their firm contact the sense of weight and pressure sometimes experienced during the progress of a "cold." A depression in the bony septum sometimes corresponds to a protuberance of the cavernous tissue as if it had yielded to repeated pressure."

Use of Pessaries in the early months of Pregnancy.—Dr. ALBERT H. SMITH, President of the Obstetrical Society of Philadelphia, has published (*American Supplement to Obstetrical Journal*, April, 1875) some highly instructive clinical observations on the use of pessaries in the early months of pregnancy, with a description of a modification of the Hodge pessary. He thinks that the influence of previously existing displacements upon the retaining capacity of the uterus in the early months have not been in general sufficiently estimated, and he relates three cases, one proving the influence of retroversion in causing abortion, and its prevention by the use of the pessary; the second proving, in addition, that mere rest upon the back, though maintained absolutely, failed to do what the reposition of the organ accomplished easily, with scarcely any restriction upon the ordinary habits of life. The third case shows further what is to be done when impregnation has already occurred before reposition has been effected. "When the condition is recognized," he remarks, "and we have reason to fear its results if not remedied, or even, as in the case reported, if positive symptoms have developed of an effort on the part of the uterus to rid itself of the ovum, why should we hesitate about replacing the organ, and retaining it in place by an instrument so absolutely innocent and free from possible objection as a properly constructed pessary? I have raised in two instances the retroverted uterus of four to five months' gestation, impacted in the pelvis, by gradual pressure of a colpeurynter, without disturbing the relation of the ovum; surely there can be no risk in gently raising a uterus of three months or less, moving as it then does freely in the pelvis."

Dr. S. describes the pessary which for twelve years he has used with much satisfaction in the relief of retroversions. The lever principle of his old teacher, the late Prof. Hodge, he regards as clearly the correct and only scientific one, the instrument getting its support from the floor of the pelvis, allowing free natural movement to the womb, and making no pressure upon the cervix, but so far practically a failure that very few patients could tolerate its presence. "The open end of the horse-shoe pattern," Dr. Smith says, "ulcerated the anterior wall of the vagina; the closed lever with its rectangular, almost square, form could not be kept in place, working round gradually until one of the angles rested against the neck of the bladder, the uterus hanging over the concavity of the lateral portion; if it maintained its position, the straight bar in front pressed against the urethra, causing vesical tenesmus and strangury or retention. The modification which I decided upon, and which has given

me entire satisfaction since, consisted in the following changes: I lengthened the closed lever so that its length is about twice its width; I changed the rectangular form into an ovoidal, with the lesser extremity in front; I made a curve from above downward in the anterior bar, and curved upward somewhat the flat posterior bar. By these changes I have the pessary easily retained in place, its length and ovoidal form adapting it to the shape of the vagina, which is conoidal, with its base toward the vaginal cul-de-sac, while on the contrary the rectangular or square pessary cannot be accommodated and retained steadily in such a cavity, but easily and almost necessarily works out of position; the curvature of the posterior bar upward takes away the sharp angles behind, and the centre of the bar resting directly behind the lower portion of the body of the uterus, allows it to hang over it suspended by its vaginal attachment, without any undue pressure upon the vaginal tissues, as will result from the use of the straight bar. The depression of the anterior bar gives a rounding off to the corners which rest against the vagina, and removes all



pressure from the urethra, a matter of immense importance, upon which depends the ability of many patients to tolerate the pessary at all. The accompanying cuts show as well as any diagram can the modification; *a* and *b* representing a lateral and oblique view of the original Hodge pessary, and *A* and *B* the corresponding view of my modification."

The merits which Dr. Smith claims for the lever pessary are, its general facility of introduction; its deriving its support from the floor of the pelvis, making no tension of the vaginal tissues in retaining its place, producing its effect as a true lever, the fulcrum being upon the pelvic floor, the weight resting on the short arm, being the body of the uterus, and the power acting on the long arm, being the elasticity of the anterior vaginal wall, the weight of the intestines, and the action of the abdominal muscles; these two latter forces, which would operate upon the displaced uterus to keep it displaced, now being utilized by the presence of the pessary to elevate it; preserving the natural mobility of the uterus; making no pressure upon the neck, so generally the seat of inflammatory tenderness; acting without consciousness upon the part of the patient, and, so far from interfering with the functions of reproduction, acting, as this paper is written to show, as an indispensable aid in many cases to the successful carrying on of that process.

"In connection with the subject of the use of pessaries in the early months of pregnancy, I may refer to a point of clinical experience which has presented itself too frequently, I think, to be a mere coincidence. When patients who have previously had children have become pregnant, while wearing pessaries they have observed and called my attention to the fact that the symptomatic nausea has been greatly diminished, and in some cases I have been especially surprised at the vast difference in the condition of the patient in this respect from that of previous pregnancies."

Case of Tubal Pregnancy successfully treated.—Prof. T. GAILLARD THOMAS records (*New York Med. Journal*, June, 1875) a case of tubal preg-

nancy successfully treated by cutting into the sac by means of a knife rendered incandescent by a powerful current of electricity, and then removing the foetus and placenta. Dr. T. operated as follows:—

The patient, Mrs. C., of Elizabeth, New Jersey, having been etherized, “was placed upon a table before a window admitting a strong light, in the left lateral position, and Sims’s speculum introduced. Through this the cyst to the left of the uterus could be distinctly palpated. Now, fixing a long-handled tenaculum in the cervix uteri, and another in the vagina near the left ilium, this part was put on a stretch so as to make of that side of the canal a triangle, the base of which was over the cyst, and the apex at the vulva. Assistants held these tenacula during the operation. Taking the platinum knife of the galvano-caustic battery, which was brought to a white heat, I now passed it gently over the base of the triangle described as created in the vagina, carrying it from one tenaculum to the other. By repeating this, the vaginal wall, over the lower segment of the cyst, was slowly cut through. In six minutes the cyst was opened by the incandescent knife, and a straw-coloured, slightly-pinkish fluid was thrown out with such force as to fly into my face and over my clothing.

“Thus far no blood whatever had been lost. I now passed my index-finger into the cyst, and felt a foetus lying horizontally with the head toward the ilium, and the feet toward the uterus. Passing in the middle finger likewise, I caught the feet between the two, and, turning the foetal body, drew them through the artificial os which I had created, and delivered the child from the vicarious uterus which it occupied. The steps of the procedure exactly resembled those adopted in ordinary podalic version. The foetal body advanced steadily until the arms reached the opening; then arrest occurred until they were swept out. The head was then arrested, and I strove to liberate it by manipulation and traction. Failing in this, I applied a pair of long-handled placental forceps, and at once it was extracted. The cord was then cut, and I proceeded to deliver the placenta by gentle traction and detachment, as is done after ordinary labour. Thus far thirteen minutes had been consumed.

“At this point, the first difficulty which had attended the operation showed itself. . . . When I had separated a little over half of the placenta, a very severe hemorrhage took place, and so much was the patient’s condition depreciated by it in the two or three minutes of its duration, that I was unwilling to delay for the removal of more. Tearing the detached portion off, I passed a large gum-elastic catheter into the sac, and injected a solution of the persulphate of iron into it. This I was very sorry to be forced to do, but the hazard of delay was too great to allow of any other course. The flow of blood was instantly checked, but this was attained at the sacrifice of perfect drainage, and the leaving of the sac full of coagulated blood, and a portion of the placenta. Instead of inserting a drainage-tube, I was forced to substitute a long tent of carbolized cotton, saturated with a solution of persulphate of iron.

“In twenty-eight minutes from the commencement of the operation, the patient was put to bed, her head kept low, the foot of the bedstead elevated about six inches, ten drops of Magendie’s solution of morphia injected subcutaneously, perfect quiet established, and a milk diet ordered.

“The foetus being examined, was found to measure six and a half inches; and the placenta, which resembled closely one developed *in utero*, looked like one of three or three and a half months of growth. As it was not entire, it was not weighed or measured.

“After this, all went well until the evening of the fourth day, when I withdrew the tent of cotton, and symptoms of septicæmia soon showed themselves. These yielded to constantly-repeated injections into the sac of carbolized water, at the end of a week. On the seventh day after the operation, slight hemorrhage took place from the sac, but was without difficulty controlled by the addition of a small amount of solution of persulphate of iron to the carbolized water.

“On the fifteenth day the remaining portion of the placenta came away spontaneously. On the sixteenth day evidences of an embolus in an unimportant vessel of the arm showed themselves, which created a small abscess, and

about the same time fears were entertained that phlegmasia dolens was developing. These last, however, proved delusive. Subsequent to this period, no evil symptom showed itself, the patient suffering only from fecal impaction, probably the result of interference with defecation by the obstruction exerted by the tumour, and the interference with peristalsis effected by the large amounts of morphia taken.

"Six weeks after this operation I examined by vaginal touch, and was surprised to find the opening made by the incandescent knife so completely closed that I found difficulty in ascertaining its exact location."

Quinia as a Stimulant to the Pregnant Uterus.—Dr. ALBERT H. SMITH, in a very interesting paper read before the College of Physicians of Philadelphia (*Am. Supplement to Obstetrical Journal*, June, 1875), furnishes the results of his experience with sulphate of quinia as a promoter of normal labour derived from trials with it in forty-three cases.

He says that the sulphate of quinia "increases the activity of the normal uterine contractions; the pains becoming more frequent and more intense, the expulsive power being greater, while the yielding of the circular fibres of the os is more prompt; the contractions maintaining their proper intermittent character, the relaxation and rest in the interval being complete; showing in this respect an entirely different action from the continuous spasmodic contraction caused by ergot. The efficiency of the contraction may be judged of from the fact, that, in the thirty-two cases having no obstruction, although many were primiparae, and a larger than usual proportion occipito-posterior positions, the average duration of active labour after the quinia was administered was about one hour. In a considerable number of the cases included, I had in several previous labours required to use forceps to combat inertia in the second stage.

"It promotes permanent tonic contraction of the uterus, after the expulsion of the placenta. Several of the patients had had flooding under my care previously, some of them habitually, and some stated they had always had a profuse and weakening flow in all their other labours. In the whole forty-two I had not one case of flooding, and as a rule the uterus contracted firmly after the second stage was completed, and showed no tendency to relax afterward.

"It diminishes the lochial discharge to a normal standard; many of the patients expressed surprise at the small amount of flow during the twenty-four hours following labour.

"Its use is followed by less after-pains than usual in a majority of cases.

"It reduces the frequency of the mother's pulse, and relieves the nervous demoralization so often seen in the first stage of labour.

"Given during parturition, it never disturbs the brain or causes its usual unpleasant effects, even in patients who at other times are very susceptible to its influence. Although the dose has been uniformly fifteen grains, in only one case was the slightest sensation of cinchonism manifest, and that lasting only a moment, in a lady who knew what she had taken and was perhaps quite prepared to feel it."

Finally, he sums up his conclusions as follows:—

"I. That quinia has no inherent property of stimulating the gravid uterus to contraction; being inert as to any effect upon the womb in a quiescent state, and having no decided action in accidental labours at any period of gestation.

"II. That to its property as a general stimulant and promotor of vital energy and functional activity, and to that alone, is due its influence upon the uterus in normal parturition; producing then no action peculiar to itself, but merely increasing the power of the uterus to expel its contents by its own natural method, converting what is a defective or even pathological action into a simple physiological process.

"III. That by availing ourselves of this power, we may, by administering full doses of the sulphate of quinia at the onset of labour, favour the rapid and safe termination of what might otherwise be a tedious and exhausting work."

Differential Signs in Dislocation of the Shoulder.—Prof. FRANK H. HAMILTON adds (*Med. Record*, March 27) the two following new differential signs in dislocation of the shoulder to those already given by surgical writers.

“First. While the head of the humerus remains in its socket, if a rule be laid upon the outside of the arm from the shoulder to the elbow, it will not touch the acromion process, but will be distant from it at least half an inch, generally one inch or more. On the other hand, if the bone is removed from the socket, in whatever direction it may be displaced, whether forwards, downwards, or backwards, unless the shoulder is much swollen, the rule, placed in the manner above stated, will touch the acromion process.

“Second. If, standing behind the patient (in case of the right shoulder) the thumb and forefinger of the left hand are made to grasp the top of the shoulder in such a manner that the interdigital commissure shall rest upon the acromion process, just outside of the acromio-clavicular articulation; and if then the finger and thumb are dropped perpendicularly, the tip of the finger will (in case the head of the humerus is not dislocated) rest upon the centre of the round upper extremity of the humerus, as it projects in front of the acromion process, while the end of the thumb will rest upon the head of the humerus behind; but the head will be felt indistinctly by the thumb, for the reason that, instead of projecting as it does in front, it actually recedes a little beneath the acromion process. Up to this moment the surgeon may entertain some doubt whether he is actually grasping with his thumb and finger the head of the bone; but if he now moves the elbow of the injured limb forwards, so as to carry the head of the humerus backwards in its socket, he will feel it press strongly upon the thumb, and this will be conclusive. If a dislocation exists, the head of the bone cannot be felt in this situation, and by the thumb thus placed.”

Both these signs he says are liable to one exception. “The phenomena would be the same, so far as these two signs are concerned, whether there was a dislocation of the head of the humerus, or a fracture with displacement of the neck of the scapula. The latter accident must, therefore, be first excluded by a careful application of the rules of diagnosis given in our treatises upon surgery; but that upon which you can most safely rely is the relative infrequency of the two accidents. It is doubtful, whether a long and active surgical practice will ever furnish you with an example of fracture of the neck of the scapula, while you will meet with a great many cases of dislocation of the shoulder.”

Nitrite of Amyl in Epilepsy.—Our excellent cotemporary, the *Chicago Journal of Nervous and Mental Disease*, April, 1875, contains some interesting experimental and clinical observations on nitrite of amyl in epilepsy, by Dr. JAMES H. McBRIDE, Asst. Physician to the Northern Hospital for the Insane, Oshkosh, Wisconsin. Dr. McB. considers the nitrite to be particularly applicable to that form of epilepsy in which spasm of the cerebral arteries is the proximate cause of the fit, and he believes that much of the future success of it in this disease will depend upon the proper differentiation of this from other forms of epilepsy.

“Those cases of epilepsy,” he says, “in which there is a distinct aura, are the cases in which the nitrite of amyl promises the most good. Epileptics not in hospital should carry a small bottle of it with them, and when an aura is felt, the amyl should be inhaled, and in this way the convulsions can usually be prevented.”

The dose of the nitrite is ten or fifteen drops placed on a piece of cotton and taken by inhalation; it should, however, be increased until the desired effect is obtained.

Canceroid or Epithelioma of the Lower Lip; Modified Operation for its Removal; Cure. Dr. MIDDLETON MITCHELL, Professor of Physiology and Histology in the Medical College of the State of South Carolina, Charleston, in an interesting article (*Charleston Med. Journ. and Rev.*, April, 1875) describes the method which he adopted in a case in which the growth involved nearly the whole lip, and in which the cure has proved perfect.

Making a semicircular incision two lines from the diseased part, and entirely circumscribing it, the whole growth was dissected away down to the mucous layer, this being preserved intact, then paring away the remains of all suspicious tissue with the scissors. Notwithstanding the wound left by the ablation of this tumour, it possessed that continuity of surface and tissue which greatly facilitated, or perhaps rendered possible, that approximation of its edges, which, with some tension of the parts, were brought carefully together and held united by harelip needles, secured by a figure-of-eight suture. Two delicate silk sutures were then added, one at the mucous border of lip, the other at the lower extremity of the wound, which now presented a perfectly vertical line corresponding to the raphe of the lip. The only dressings were compresses dipped frequently into cold water, during five days, when, after scarcely any suppuration, the wound was almost entirely healed. Though the mouth is drawn smaller, there exists not the slightest deformity.

Prof. Michell calls attention to the chief feature of the operation, which consists in the preservation of the entire mucous membrane, which, with more or less available and useful integument, is completely sacrificed for the smallest tumours in the classic V incision invariably practised. He says: "In commenting on this preservation of the mucous layer, I wish to revive, if possible, a modification of the usual operation, so wholly neglected that perhaps few if any writers on surgery refer to it. Though practised more than half a century ago, no one, if we except Mr. Syme, seems to have considered it, and even his endorsement, completely substantiating its results, has not evidently met with any kind of notice even in the most elaborate works before us."

"In advocating," says Prof. M., "then, this most useful advance in conservative surgery, made practicable in the simple retention and *employment* of an entire mucous layer, I must be understood as restricting this method absolutely to canceroid disease or epithelioma, as Hannover termed it, which is different from cancer.

"I would not have it understood that I reject altogether the Celsian V incision, for in limited growths or small tumours it is the obvious duty of the surgeon to give his patient a clean cut, when he simply thereby converts the wound into an artificial harelip of easy adjustment; but I advocate this mode of operating as well calculated to allay the embarrassment and apprehension of those who, in presence of an epithelioma invading half, or it may be the whole of the lip, are necessarily led to contemplate the irremediable gap, which nothing but some cheiloplastic operation, as bold as the formidable procedure of a Dieffenbach through cheek and chin involving facial artery and nerve and possibly parotid duct, could fill; or some modification of a like kind with its attendant sequelæ, crysipelas—an alarming source of failure in plastic surgery; erythematous inflammation, oftentimes troublesome and painful; not to speak of a yet more frequent source of disappointment, after-contractions.

"Too much importance cannot be given to the retention of the entire mucous membrane of the lip, since a basis is furnished under all circumstances for an outgrowth of granulations from a perfectly healthy layer of subjacent tissue in a vast majority of cases, even of the third and worst variety of the disease."

Poisoning by Aconite and Chloroform.—Dr. J. E. BLAKE, reports (*New York Med. Journal*, April, 1875) an extremely interesting case of this. The subject of it was a young lady, who, by mistake, took more than one drachm of a mixture containing equal parts of tincture of aconite root and chloroform. Dr. B. saw her about fifteen minutes afterwards, and before any symptoms of poisoning were manifest. Emetics, and afterwards the stomach-pump, were resorted to, without arresting the lethal effects of the poison, which soon appeared, and were rapidly increasing in intensity. Dr. T. Gaillard Thomas was called in consultation, when galvanism, artificial respiration, and the inhalation of oxygen gas, warm applications, stimulants, hypodermic injections of atropia and of cognac, etc., were most perseveringly employed, though the condition of the patient seemed to denote the hopelessness of all efforts to save life, the pulse having ceased, and nothing but a feeble, uncertain flutter could, with difficulty, be made out over the region of the heart, so that for nearly half a

minute one of the medical attendants supposed the patient dead. The unflagging application of the remedies mentioned, for sixteen hours, finally proved successful. The perseverance of the physicians under such discouraging circumstances is in the highest degree creditable to them, and should admonish us never to despair in the apparently most desperate circumstances.

Comparative Mortality of the White and Coloured Populations of Richmond, Va.—The *Virginia Medical Monthly*, for June last, contains some interesting remarks on this subject by Dr. L. S. JOYNES, Secretary to the Virginia Board of Health.

In longevity and reproductive power, Dr. J. considers that we have evidence that the coloured race, in a congenial climate, is quite equal to that of the white races.

“With regard to the mortality of our coloured population in Richmond,” he remarks, “it is worthy of note that it is most disproportionate during the early years of life, when the influence of causes tending to impair nutrition and depress the vital powers is most sensibly felt. Thus, under the age of 5 years, while the deaths among the whites amount to 42.12 per cent. of their total mortality, among the coloured population they amount to 47.08 per cent. of the whole. But this excess continues during the whole period of growth; for no less than 56.58 per cent. of the deaths among the coloured take place under 20 years of age, against 49.24 per cent. among the whites. After the age of 20, the excess of mortality, though it does not disappear, becomes comparatively small.”

The excess of still births among the coloured population he says is “truly enormous.” Thus, “that while among the whites there was 1 child still-born to every 18 born alive, among the coloured there was 1 to every 7.

“There are several obvious causes which may be specified as occurring to produce this great disproportion, and which will suffice to account for the facts, without the need of any questionable assumption as to the influence of ‘race.’

“*First.* Among women engaged in laborious and menial occupations, a much greater number of abortions and still-births will be likely to occur from *accidental* causes—such as falls, blows, strains of the abdominal muscles, etc., than among women leading easier and quieter lives.

“*Secondly.* Wherever the general standard of health is lower, and the death-rate higher, there will be a greater chance of the fœtus dying *in utero*, as the result of disease in the mother reacting upon the fœtus; and it is quite possible that fatal disease may be induced in the fœtus by unwholesome surroundings of the mother (bad air, etc.), even though the latter escape any serious attack of disease.

“*Thirdly.* Syphilis in one or the other parent is probably now a more frequent cause of the death of the fœtus among negroes than among whites.

“*Fourthly.* When girls commence the office of child-bearing prematurely, before the full development of the pelvis and the soft parts concerned in parturition, a larger proportion of the children of the first labour will be born dead than when women reach full maturity before becoming mothers; and it is well known that premature child-bearing is far more common among the negroes than among the whites.

“*Fifthly.* A very decided influence upon the proportion of still-births results from the fact that the great majority of negro women are attended in labour by incompetent midwives, wholly unskilled in the management of the difficulties and complications of labour, and ignorant even of the means of preventing the loss of the child from mere delay in its expulsion.

“*Sixthly.* There is strong reason for the belief that a certain, perhaps a considerable, proportion of the still-births reported are not still-births at all, but cases of *infanticide*, whether by the infliction of actual violence, or by the omission of the necessary care of the new-born child.”

UNIVERSITY OF PENNSYLVANIA.

MEDICAL DEPARTMENT.

*Thirty-Sixth and Locust Streets, Philadelphia.***One Hundred and Tenth Annual Session, 1875-76.**

PROFESSORS.

GEORGE B. WOOD, M.D., LL.D., Emeritus Professor of Theory and Practice of Medicine

HENRY H. SMITH, M.D., Emeritus Professor of Surgery.

JOSEPH CARSON, M.D., Professor of Materia Medica and Pharmacy.

ROBERT E. ROGERS, M.D., Professor of Chemistry.

JOSEPH LEIDY, M.D., LL.D., Professor of Anatomy.

FRANCIS G. SMITH, M.D., Professor of the Institutes of Medicine.

R. A. F. PENROSE, M.D., LL.D., Professor of Obstetrics and the Diseases of Women and Children.

ALFRED STILLÉ, M.D., Professor of Theory and Practice of Medicine, and of Clinical Medicine.

D. HAYES AGNEW, M.D., LL.D., Professor of Surgery and Clinical Surgery.

WILLIAM PEPPER, M.D., Clinical Professor of Medicine.

JOHN NEILL, M.D., Clinical Professor of Surgery.

WILLIAM GOODELL, M.D., Clinical Professor of Diseases of Women and Children.

WILLIAM F. NORRIS, M.D., Clinical Professor of Diseases of the Eye.

GEORGE STRAWBRIDGE, M.D., Clinical Professor of Diseases of the Ear.

HORATIO C. WOOD, Jr., M.D., Clinical Professor of Nervous Diseases.

LOUIS A. DUHRING, M.D., Clinical Professor of Diseases of the Skin.

JAMES TYSON, M.D., Professor of Morbid Anatomy and Histology.

H. LENOX HODGE, M.D., Demonstrator of Anatomy.

CHARLES T. HUNTER, M.D., Demonstrator of Surgery.

GEORGE M. WARD, M.D., Demonstrator of Practical Chemistry.

ISAAC OTT, M.D., Demonstrator of Experimental Physiology.

The Medical Faculty occupies an elegant and commodious building which affords ample space for Dissecting and Operating Rooms, for the valuable Museum, Apparatus, and Library, and secures superior advantages to the student in health and facility of study. Didactic Lectures and Laboratory Instruction are given in this building, and Daily Clinics in the UNIVERSITY HOSPITAL and in the PHILADELPHIA HOSPITAL, which are adjacent. Clinical instruction continues during the whole year, except July and August.

Matriculates in the Medical Department are entitled to attend, during the Spring and Summer, the lectures of the Auxiliary Faculty on Zoology and Comparative Anatomy, by Prof. H. ALLEN, M.D.; on Botany, by Prof. H. C. WOOD, Jr., M.D.; on Hygiene, by Prof. H. HARTSHORNE, M.D.; on Medical Jurisprudence and Toxicology, by Prof. J. J. REESE, M.D.; and on Mineralogy and Geology, by Prof. S. B. HOWELL, M.D.

The Dissecting Rooms, complete with every improvement, are open during the same period; and the Operating Rooms for the application of bandages and surgical apparatus, and for operations on the cadaver, are open during the winter session.

Besides the obligatory study of practical anatomy, practical courses are, during the winter and spring, accessible to students in Surgery, Chemistry, Physiology, and Comparative Anatomy.

STUDENTS WHO HAVE ATTENDED TWO FULL COURSES OF LECTURES ON ANATOMY, CHEMISTRY, MATERIA MEDICA, AND THE INSTITUTES OF MEDICINE, MAY BE EXAMINED ON THOSE SUBJECTS AT THE END OF THE SECOND COURSE, AND, IF APPROVED, WILL, AT THE END OF THEIR THIRD COURSE, BE EXAMINED ONLY ON THEORY AND PRACTICE OF MEDICINE, SURGERY, AND OBSTETRICS.

The Lectures of the Session of 1875-76 will commence on the first Monday (4th) of October, and terminate on the last day of February.

FEES —For one full course of Lectures, \$140. For each professor's ticket for one course, \$20. Matriculation fee (paid once only), \$5. These fees are payable in advance. Graduation fee, \$30.

Letters of inquiry should be addressed to

ROBERT E. ROGERS, M.D., DEAN.

P. O. Box 2838 Philadelphia.

JEFFERSON MEDICAL COLLEGE.

PHILADELPHIA.

The Fifty-First Session of the Jefferson Medical College will begin on Monday, 4th October, 1875, and will continue until 1st of March, 1876. PRELIMINARY LECTURES will be held from Monday, 6th September.

PROFESSORS.

JOSEPH PANCOAST, M.D., General, Descriptive, and Surgical Anatomy (*Emeritus*).
 SAMUEL D. GROSS, M.D., LL.D., D.C.L. Oxon., Institutes and Practice of Surgery.
 ELLERSLIE WALLACE, M.D., Obstetrics and Diseases of Women and Children.
 B. HOWARD RAND, M.D., Chemistry.
 JOHN B. BIDDLE, M.D., Materia Medica and General Therapeutics.
 J. AITKEN MEIGS, M.D., Institutes of Medicine and Medical Jurisprudence.
 J. M. DA COSTA, M.D., Practice of Medicine.
 WILLIAM H. PANCOAST, M.D., General, Descriptive, and Surgical Anatomy.

Special courses are also given on the following subjects:—

DERMATOLOGY and SYPHILITIC DISEASES, by Dr. F. F. MAURY, one of the Surgeons to the Philadelphia Hospital.

PATHOLOGICAL ANATOMY, by Dr. W. W. KEEN, one of the Surgeons to the St. Mary's Hospital.

OPERATIVE SURGERY, with Operations on the Cadaver, by Dr. JOHN H. BRINTON, one of the Surgeons to the Philadelphia Hospital.

OPHTHALMOLOGY and OTOLOGY are treated both clinically and didactically during the entire course, by Dr. WILLIAM THOMSON, one of the Surgeons to the Wills Ophthalmic Hospital.

LARYNGOSCOPY, with DISEASES OF THE THROAT, by Dr. J. SOLIS-COHEN.

TOXICOLOGY, by Dr. HENRY LEFFMANN.

The DEMONSTRATOR of Surgery, Dr. J. EWING MEARS, delivers a distinct course of Demonstrations of Surgery, with illustrations on the Cadaver, during the entire session.

PRACTICAL CHEMISTRY with *Qualitative and Quantitative Analysis*, the *Examination of Normal and Abnormal Products*, and *Manipulation* by the Student himself, is taught by the DEMONSTRATOR of Chemistry, under the supervision of the Professor of Chemistry.

PRACTICAL ANATOMY and MORBID ANATOMY. For the study of Practical Anatomy, a full supply of material is furnished *free of charge*. The Anatomical Rooms are spacious and provided with every convenience, and not only are subjects for dissection to be had without expense, but there are no incidental or extra charges of any kind.

CLINICAL INSTRUCTION is given daily at the College. The SURGICAL CLINIC is held on Wednesdays and Saturdays, by Professors GROSS, JOSEPH PANCOAST, and W. H. PANCOAST. The MEDICAL CLINIC, on Mondays and Thursdays, by Profs. DA COSTA, BIDDLE, and MEIGS. The CLINIC of Diseases of Women and Children, on Tuesday, by Prof. WALLACE. The CLINIC of Diseases of the Eye and Ear, on Fridays, by Dr. THOMSON. The PENNSYLVANIA HOSPITAL is near the College, and the corps of lecturers includes Profs. DACOSTA and MEIGS. Prof. PANCOAST and Drs. MAURY and BRINTON are connected with the staff of the PHILADELPHIA HOSPITAL.

FEES:

For a full Course	\$140
Matriculation Fee, (paid once only)	5
Graduation Fee	30

A SUMMER COURSE of Supplementary Lectures is given, beginning 27th March, 1876, and extending through the months of April, May, and June. There is no additional charge for this Course to Matriculates of the College, except a registration fee of five dollars.

The Annual Announcement will be sent on application to

J. B. BIDDLE, M.D.,
Dean.

BELLEVUE HOSPITAL MEDICAL COLLEGE—CITY OF NEW YORK.

SESSION OF 1875-76.

THE Collegiate year in this Institution embraces a Preliminary Autumnal Term, the regular Winter Session, and a Summer Session.

The Preliminary Autumnal Term for 1875-76 will commence on Wednesday, September 15, 1875, and continue until the opening of the Regular Session. During this term, instruction, consisting of didactic lectures on special subjects, and daily clinical lectures, will be given, as heretofore, by the entire Faculty. Students designing to attend the Regular Session are strongly recommended to attend the Preliminary Term, but attendance during the latter is not required. *During the Preliminary Term Clinical and Didactic Lectures will be given in precisely the same number and order as in the Regular Session.*

The Regular Session will commence on Wednesday, September 29, 1875, and end about the 1st of March, 1876.

FACULTY.

ISAAC E. TAYLOR, M.D., Emeritus Professor of Obstetrics and Diseases of Women and Children, and President of the College.

JAMES R. WOOD, M.D., LL.D., Emeritus Professor of Surgery.

FORDYCE EARKER, M.D., Professor of Clinical Midwifery and Diseases of Women.

AUSTIN FLINT, M.D., Professor of the Principles and Practice of Medicine and Clinical Medicine.

W. H. VAN BUREN, M.D., Professor of Principles and Practice of Surgery, with Diseases of Genito-Urinary System and Clinical Surgery.

LEWIS A. SAYRE, M.D., Professor of Orthopedic Surgery, Fractures and Dislocations, and Clinical Surgery.

ALEXANDER B. MOTT, M.D., Professor of Clinical and Operative Surgery.

WILLIAM T. LUSK, M.D., Professor of Obstetrics and Diseases of Women and Children, and Clinical Midwifery.

EDMUND R. PEASLEE, M.D., LL.D., Professor of Gynæcology.

EDWARD G. JANEWAY, M.D., Lecturer on Materia Medica and Therapeutics and Clinical Medicine.

AUSTIN FLINT, Jr., M.D., Professor of Physiology and Physiological Anatomy, and Secretary of the Faculty.

ALPHEUS B. CROSBY, M.D., Professor of Descriptive and Surgical Anatomy.

R. OGDEN DOREMUS, M.D., LL.D., Professor of Chemistry and Toxicology.

Professors of Special Departments, etc.

HENRY D. NOYES, M.D., Professor of Ophthalmology and Otology.

JOHN P. GRAY, M.D., Professor of Psychological Medicine and Medical Jurisprudence.

EDWARD L. KEYES, M.D., Professor of Dermatology, and Adjunct to the Chair of Principles of Surgery, etc.

EDWARD G. JANEWAY, M.D., Professor of Pathological and Practical Anatomy. (Demonstrator of Anatomy.)

A distinctive feature of the method of instruction in this College, is the union of clinical and didactic teaching. All the lectures are given within the hospital grounds. During the Regular Winter Session, in addition to four didactic lectures on every week day, except Saturday, two or three hours are daily allotted to clinical instruction. The union of clinical and didactic teaching will also be carried out in the Summer Session; nearly all of the teachers in this Faculty being physicians and surgeons to the Bellevue Hospital.

The Summer Session will consist chiefly of Recitations from Text-books. This term continues from the middle of March to the end of June. During this Session there will be daily recitations in all the departments held by a corps of examiners appointed by the regular Faculty. Regular Clinics will also be held.

Fees for the Regular Session.

Fees for Tickets to all the Lectures during the Preliminary and Regular Term, including	
Clinical Lectures	\$140 00
Matriculation Fee	5 00
Demonstrator's Ticket (including material for dissection)	10 00
Graduation Fee	30 00

Fees for the Summer Session.

Matriculation (Ticket good for the following Winter)	\$5 00
Recitations, Clinics, and Lectures	50 00
Dissecting (Ticket good for the following Winter)	10 00

For the Annual Circular and Catalogue, giving regulations for graduation and other information, address the Secretary of the College, Prof. ARSTIN FLINT, Jr., Bellevue Hospital Medical College.

DETROIT MEDICAL COLLEGE.

Sessions of 1875-76.

FACULTY.

PRELIMINARY AND REGULAR SESSIONS.

EDWARD W. JENKS, M.D., President, Professor of Medical and Surgical Diseases of Women and Obstetrics.

GEORGE P. ANDREWS, M.D., Professor of Principles and Practice of Medicine.

JAMES F. NOYES, M.D., Professor of Ophthalmology and Aural Surgery.

ALBERT B. LYONS, M.D., Professor of Chemistry and Toxicology.

THEODORE A. MCGRAW, M.D., Treasurer, Professor of Principles and Practice of Surgery and Clinical Surgery.

C. B. GILBERT, M.D., Professor of Materia Medica, Therapeutics, and Clinical Diseases of Children.

N. W. WEBBER, M.D., Professor of General and Descriptive Anatomy and Clinical Surgery.

LEARTUS CONNOR, M.D., Secretary, Professor of Physiology and Clinical Medicine.

RECITATION SESSION.

H. O. WALKER, M.D., Lecturer on Genito-Urinary System and Rectum.

DANIEL LAFERTE, M.D., (Demonstrator of Anatomy and) Lecturer on Orthopædic Surgery and Tumours.

J. G. JOHNSON, M.D., Lecturer on Diseases of Mind and Nervous System.

J. H. CARSTENS, M.D., Lecturer on Differential Diagnosis.

E. L. SHURLY, M.D., Lecturer on Diseases of Throat and Lungs.

F. A. SPALDING, M.D., Lecturer on Diseases of Skin.

DAVID INGLIS, M.D., Curator of Museum and Librarian.

The Collegiate Year is divided into three sessions.

PRELIMINARY SESSION opens Wednesday, September 1st, and continues one month. The Clinics are held and the Lectures delivered by the Professors of the regular Faculty, and in the same order and frequency as during the Winter Term. Opportunity is given to dissect or work in the Chemical Laboratory.

The REGULAR SESSION opens Wednesday, October 6th, 1875, and continues five months. During this term all the branches of *General Medicine and Surgery*, both scientific and practical, are taught with care and thoroughness. All students are daily examined on the subjects of the lectures and on their dissecting and laboratory work.

Senior students have *daily practice* in the art of *examining patients*, in forming their own diagnosis, prognosis, and treatment. As this is done under the direction of the professor holding each clinic, and in the presence of the class, it constitutes an invaluable course of training.

The RECITATION SESSION begins Wednesday, March 10th, 1875, and continues four months. Daily during this term there will be held a lecture, recitation, and one or two clinics. The lectures will be upon special subjects of medical or surgical interest.

The recitations will embrace the general subjects of the Regular Session, viz., Anatomy, Surgery, Midwifery, Diseases of Women, Physiology, Practice of Medicine, and Materia Medica.

Though the Recitation and Preliminary Sessions are optional, it is hoped that all who can will avail themselves of their manifest advantages in supplementing the regular winter course.

Three Hospitals—Harper's, St. Mary's, and St. Luke's—with two large free dispensaries, afford an abundance of clinical material for illustrative and practical teaching.

All lectures are delivered on Hospital grounds. The *peculiar feature* of this school is the *intimate union* between its *clinical and didactic instruction*.

Fees for Preliminary and Regular Sessions.

Matriculation Fee	\$5 00
Hospital Fees (good for one year)	10 00
Lecture Fee.	40 00
Graduation Fee (to be paid February 1st, 1876)	25 00
Lecture Fees to Third Course Students	25 00

Fees for Recitation Session.

Matriculation (Ticket good for one year)	5 00
Recitation and Lecture Fees	10 00
Hospital Ticket (good for one year)	10 00

All fees payable in advance to the *Secretary*.

Board and Rooms can be obtained at low rates—according to accommodations—from \$3 to \$5 per week. Announcement and Catalogue, or any further information which may be desired, can be promptly obtained by addressing

LEARTUS CONNOR, M.D., *Secretary*.

94 Cass St., Detroit, Mich.

MEDICAL DEPARTMENT OF THE UNIVERSITY OF LOUISIANA—NEW ORLEANS.

FACULTY.

A. H. CENAS, M.D., Emeritus Professor of Obstetrics and Diseases of Women and Children.

T. G. RICHARDSON, M.D., Professor of General and Clinical Surgery.

SAMUEL M. BEMISS, M.D., Professor of the Theory and Practice of Medicine and Clinical Medicine.

STANFORD E. CHAILLE, M.D., Professor of Physiology and Pathological Anatomy.

FRANK HAWTHORN, M.D., Professor of General and Clinical Obstetrics and Diseases of Women and Children.

JOSEPH JONES, M.D., Professor of Chemistry and Clinical Medicine.

SAMUEL LOGAN, M.D., Professor of Anatomy and Clinical Surgery.

ERNEST S. LEWIS, M.D., Professor of Materia Medica and Therapeutics.

EDMOND SOUCHON, M.D., ALBERT B. MILES, Demonstrators of Anatomy.

The next annual course of instruction in this Department (now in the forty-second year of its existence) will commence on Monday, the 15th day of November, 1875, and terminate on Saturday the 13th day of March, 1876. Preliminary Lectures on Clinical Medicine and Surgery will be delivered in the amphitheatre of the Charity Hospital, beginning on the 20th of October, without any charge to students.

The means of teaching now at the command of the Faculty are unsurpassed in the United States. Special attention is called to the opportunities presented for

CLINICAL INSTRUCTION.

The act establishing the University of Louisiana gives the Professors of the Medical Department the use of the great Charity Hospital as a school of practical instruction.

The Charity Hospital contains nearly 700 beds, and received, during the last year, nearly six thousand patients. Its advantages for professional study are unsurpassed by any similar institution in this country. The Medical, Surgical, and Obstetrical Wards are visited by the respective professors in charge daily, from eight to ten o'clock A. M., at which time all the students are expected to attend and familiarize themselves, *at the bedside of the patients*, with the diagnosis and treatment of all forms of injury and disease.

The regular lectures at the hospital, on Clinical Medicine by Professors Bemiss and Joseph Jones, Surgery by Professors Richardson and Logan, Diseases of Women and Children by Professor Hawthorn, and Special Pathological Anatomy by Professor Chaillé, will be delivered in the amphitheatre on Monday, Wednesday, Thursday, and Saturday, from 10 to 12 o'clock A. M.

The administrators of the hospital elect annually *twelve resident students*, who are nominated by the institution.

TERMS.

For the Tickets of all the Professors	\$140 00
For the Ticket of Practical Anatomy	10 00
Matriculation Fee	5 00
Graduation Fee	30 00

Graduates of other recognized schools may attend all the lectures upon payment of the matriculation fee; but they will not be admitted as candidates for the Diploma of the University except upon the terms required of second course students. All fees are payable in advance.

For further information, address

T. G. RICHARDSON, M.D., *Dean*.

HARVARD UNIVERSITY.

MEDICAL DEPARTMENT—BOSTON, MASS.

NINETY-SECOND ANNUAL ANNOUNCEMENT. (1875-76.)

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GEORGE F. H. MARKOE, Instructor in Materia Medica.

WILLIAM L. RICHARDSON, Instructor in Obstetrics.

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JAMES R. CHADWICK, M.D., Lecturer on Diseases of Women.

CHARLES P. PUTNAM, M.D., Lecturer on Diseases of Children.

JAMES J. PUTNAM, M.D., Lecturer on Diseases of the Nervous System.

The plan of study was radically changed in 1871.* Instruction is given by lectures, recitations, clinical teaching, and practical exercises, distributed throughout the academic year. This year begins September 30, 1875, and ends on the last Wednesday in June, 1876. It is divided into two equal terms, with a recess of one week between them. Either of these two terms is more than equivalent to the former "Winter Session," as regards the amount and character of the instruction. The course of instruction has been greatly enlarged, so as to extend over three years, and has been so arranged as to carry the student progressively and systematically from one subject to another in a just and natural order. In the subjects of anatomy, histology, chemistry, and pathological anatomy, laboratory work is largely substituted for, or added to, the usual methods of instruction.

Instead of the customary oral examination for the degree of Doctor of Medicine, held at the end of the three years' period of study, a series of written examinations on all the main subjects of medical instruction has been distributed through the whole three years; and every candidate for the degree must pass a satisfactory examination in every one of the principal departments of medical instruction during his period of study.

DIVISION OF STUDIES.

For the First Year—Anatomy, Physiology, and General Chemistry.

For the Second Year—Medical Chemistry, Materia Medica, Pathological Anatomy, Theory and Practice of Medicine, Clinical Medicine, Surgery and Clinical Surgery.

For the Third Year—Therapeutics, Obstetrics, Theory and Practice of Medicine, Clinical Medicine, Surgery and Clinical Surgery.

Students are divided into three classes, according to their time of study and proficiency. Students who began their professional studies elsewhere may be admitted to advanced standing; but all persons who apply for admission to the second or third year's class must pass an examination in the branches already pursued by the class to which they seek admission. Examinations are held in the following order:—

At the end of the first year—Anatomy, Physiology, and General Chemistry.

End of second year—Medical Chemistry, Materia Medica, and Pathological Anatomy.

End of third year—Therapeutics, Obstetrics, Theory and Practice of Medicine, Clinical Medicine, and Surgery.

Examinations are also held before the opening of the School, beginning September 27th.

Students who do not intend to offer themselves for a degree will also be received at any part of the course, for one term or more. Any student may obtain, without an examination, a certificate of his period of connection with the school.

REQUIREMENTS FOR A DEGREE.—Every candidate must be twenty-one years of age; must have studied medicine three full years, have spent at least one continuous year at this school, have passed the required examinations, and have presented a thesis.

COURSE FOR GRADUATES.—For the purpose of affording to those already Graduates of Medicine additional facilities for pursuing clinical, laboratory and other studies, in such subjects as may specially interest them, the Faculty has established a course which comprises the following branches: Histology; Physiology; Medical Chemistry; Pathological Anatomy; Surgery; Auscultation, Percussion and Laryngoscopy; Ophthalmology; Dermatology; Syphilis; Psychological Medicine; Otology; Electro-therapeutics; Gynecology; and Obstetrics.

Single branches may be pursued, and on payment of the full fee also the privilege of attending

* In and after September, 1877, an examination on entrance will be required. For particulars see Catalogue.

any of the other exercises of the Medical School, the use of the laboratories and library, and all other rights accorded by the University will be granted. Graduates of other Medical Schools who may desire to obtain the degree of M.D. at this University, will be admitted to examination for this degree after a year's study in the Graduates' Course.

FEES.—For Matriculation, \$5; for the Year, \$200; for one Term alone, \$120; for Graduation, \$30. For Graduates' Course, the fee for one year is \$200; for one Term, \$120; and for single courses such fees as are specified in the Catalogue. Payment in advance.

Members of any one department of Harvard University have a right to attend lectures and recitations in any other department without paying additional fees.

For further information, or Catalogue, address

DR. R. H. FITZ, Sec'y, 108 Boylston St., Boston, Mass.

BOYLSTON MEDICAL PRIZE QUESTIONS.

The Boylston Medical Committee, appointed by the President and Fellows of Harvard University, announce that the questions proposed for 1876 are—

1. Civil Hospital-Construction (not of Lunatic Asylums); Location, Materials, Arrangement, Warming, Ventilation, Drainage, Lighting; with Designs.

The author of a dissertation on this subject, considered worthy of a prize, will be entitled to a premium of Three Hundred Dollars.

2. Do Women require mental and bodily rest during Menstruation; and to what extent?

The author of a dissertation on this subject, considered worthy of a prize, will be entitled to a premium of Two Hundred Dollars.

Dissertations on the above subjects must be transmitted, post paid, to J. B. S. Jackson, M.D., Boston, on or before the first Wednesday in April, 1876.

The following are the questions proposed for 1877:—

1. Are Epidemics, and so-called contagious diseases, necessarily dependent upon material agencies, acting through the stomach, or otherwise?

2. Athletic Sports, Training, Violent Exercise, etc., as now practiced by young men; their temporary or permanent influence on the health.

The author of a dissertation considered worthy of a prize, on either of the subjects proposed for 1877, will be entitled to a premium of Two Hundred and Fifty Dollars.

Dissertations on these subjects must be transmitted as above, on or before the first Wednesday in April, 1877.

For further particulars see Boston Medical and Surgical Journal, of June 24, 1875, or address

RICHARD M. HODGES, M.D., Sec'y, Boston, Mass.

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WITH AN AMERICAN SUPPLEMENT,

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Obstetrician to the State Hospital for Women and Infants, Philadelphia.

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We cannot withhold the expression of the admiration this elegant journal excites.—*Western Lancet*, March, 1875.

gives us the best obstetrical literature from across the water, while the Supplement supplies the latest of interest in this country.—*Indiana Journal of Medicine*, Nov. 1874.

This is certainly a very excellent journal. It

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OF THE MEDICAL SCIENCES
FOR OCTOBER 1875.

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All communications intended for insertion in the Original Department of this Journal are only received for consideration with the distinct understanding that they are sent for publication to this Journal alone, and that abstracts of them shall only appear elsewhere subsequently, with due credit. Gentlemen favouring us with their communications are considered to be bound in honour to a strict observance of this understanding.

Contributors who wish their articles to appear in the next number are requested to forward them before the 1st of November.

Compensation is allowed for original articles and reviews, except when illustrations or extra copies are desired. A *limited* number of extra copies (not exceeding *fifty*) will be furnished to authors, *provided the request for them be made at the time the communication is sent* to the Editors.

The following works have been received:—

Sur un Nouveau Procédé Opératoire de la Cataracte (Extraction à Lambeau Pé-riphérique); par L. DE WECKER. Paris, 1875.

Clinique Ophthalmologique du Dr. De Wecker, à Paris. Relevé Statistique, par le Dr. MASSELOU, Chef de Clinique. Paris, 1875.

Delle Difficoltà e della Diagnosi in Medicina scritte da Antonio Feroci, Medico Pisano.

Storia di una Gastrite Terminata per Gangrena Seguita da Osservazioni Intorno al Modo Occulto di Procedere di Alcune Malattie del Dott. CAR. D. A. FEROCI di Pisa. Milano, 1873.

Bad Homburg and its Resources. For the use of English Visitors especially. By Dr. HOEBER, Resident Physician at Homburg. Bad Homburg, 1875.

Reports of the Medical Officer of the Privy Council and Local Government Board: New Series—No. I. Annual Report to the Local Government Board with regard to the year 1873, with Appendix. No. II. Supplementary Report to the Local Government Board on some Recent Inquiries under the Public Health Act, 1858. No. III. Report to the Lords of the Council on Scientific Investigations, made under their direction, in aid of Pathology and Medicine. Presented to both Houses of Parliament by command of Her Majesty. London: Printed by George E. Eyre and William Spottiswoode, Printers to the Queen's Most Excellent Majesty, for Her Majesty's Stationery Office. 1874.

The Gentle Treatment of Spinal Curvature. By HENRY HEATHER BLOG, Assoc. Inst. C. E. London: J. & A. Churchill, 1875.

Manual of Pathological Anatomy. By C. HANDFIELD JONES, M.B. CANTAB., F.R.S., and EDWARD H. SIEVEKING, M.D., F.R.C.P., Physician Extraordinary to the Queen. Second edition, revised, enlarged, and edited by JOSEPH FRANK PAYNE, M.B. Oxon., F.R.C.P. London: J. & A. Churchill, 1875.

Researches into the Antagonism of Medicine; being the Report of the Edinburgh Committee of the British Medical Association. By JOHN HUGHES BENNETT, M.D., F.R.S.E., Chairman and Reporter. London: J. & A. Churchill, 1875.

The Successful Treatment of Internal Aneurism by Consolidation of the Contents of the Sac. By JOLIFFE TUFNELL, F.R.C.S.I., M.R.I.A., President of Royal College of Surgeons, Ireland, etc. Second edition. London: J. & A. Churchill, 1875.

On Poisons in Relation to Medical Jurisprudence and Medicine. By ALFRED SWAINE TAYLOR, M.D., F.R.S., Lect. on Med. Jurisp. in Guy's Hospital. Third American from third and thoroughly revised English edition. Philadelphia: Henry C. Lea, 1875.

Vision: Its Optical Defects, and the Adaptation of Spectacles. By C. J. FENNER, M.D. Philadelphia: Lindsay & Blakiston, 1875.

On Paralysis from Brain Disease in its Common Forms. By H. CHARLTON BASTIAN, M.D., F.R.S., Prof. of Path. Anat. in University College. New York: D. Appleton & Co., 1875.

Clinical Lectures and Essays. By Sir JAMES PAGET, Bart., F.R.S., D.C.L. Oxon., Sergeant-Surgeon Extraordinary to Her Majesty the Queen. Edited by HOWARD MARSH, F.R.C.S., Assist. Surg. to St. Bartholomew's Hospital. New York: D. Appleton & Co., 1875.

Cyclopædia of the Practice of Medicine. Edited by Dr. H. VON ZIEMSEN, Prof. of Clin. Med. in Munich, Bavaria. Vol. X.—Diseases of the Female Sexual Organs, by Prof. CARL SCHROEDER, of Erlangen, Bavaria. ALBERT H. BUCK, M.D., New York, Editor of Am. edition. New York: William Wood & Co., 1875.

The Mucous Membrane of the Uterus, with special reference to the Development and Structure of the Decidua. By GEO. J. ENGELMANN, A.M., M.D., Master in Obstetrics in University of Vienna, etc. New York: William Wood & Co., 1875.

A Series of American Clinical Lectures. Edited by E. C. SEGUIN, M.D. No. VI.—Otitis. By C. R. AGNEW, M.D., Clin. Prof. of Diseases of Eye and Ear in Coll. of Phys. and Surg., New York. No. VII.—Capillary Bronchitis of Adults. By CALVIN ELLIS, M.D., Jackson Prof. of Clin. Medicine in Harvard Univ. New York: G. P. Putnam's Sons, 1875.

Cantho-Plasty as a Remedy in Certain Diseases of the Eye. By C. R. AGNEW, M.D., N. Y. New York: G. P. Putnam's Sons, 1875.

Urinology, and its Practical Applications. By GEORGE M. KOBER, M.D. Louisville, 1875.

Tinnitus Aurium. By SAMUEL THEOBALD, M.D., Surgeon to Baltimore Charity Eye and Ear Dispensary. Baltimore, 1875.

Clinical Studies with the Non nauseating Use of Ipecacuanha, chiefly in Intermittents. By ALFRED A. WOODHULL, M.D., Assist. Surg. U. S. A. Atlanta, 1875.

Open Dressing of Amputation Wounds—Wetted Adhesive Strap. By F. PEYRE PORCHER, M.D., Prof. of Inst. Med. in Med. Coll. of State of South Carolina.

Fracture of the Inferior Maxillary Bone. By JOS. F. MONTGOMERY, M.D., of Sacramento, Cal.

Self-Injection of the Bladder in the Treatment of the Consequences of Obstructive Enlargement of the Prostate, and the best means of accomplishing it; together with two cases illustrating another method of removing Foreign Bodies from the Urethra. By W. H. VAN BUREN, A.M., M.D., Prof. of Prin. and Pract. of Surgery, etc. in Bellevue Hosp. Med. Coll., and E. L. KEYES, A.M., M.D., Adjunct Prof. of Surgery, etc. in Bellevue Hosp. Med. Coll., New York. 1875.

An Inquiry into the Modus Operandi of the Yellow Fever Poison. By GEORGE M. STERNBERG, M.D., Assist. Surg. U. S. A.

Cases of Disease in the Orbit. By HENRY D. NOYES, M.D., Prof. of Ophthal. and Otol. in Bellevue Hosp. Med. Coll., N. Y. New York: G. P. Putnam's Sons, 1875.

Treatment of Uterine Displacements. By H. F. CAMPBELL, M.D., of Augusta.

A Case of Traumatic Aneurism of the Left Subclavian Artery treated successfully by Distal Compression. By WARREN STONE, M.D., Prof. of Surgical Anat. in Charity Hosp. Med. Coll., New Orleans.

Iridotomy, and its Applicability to Certain Defects of the Eye. By A. W. CALHOUN, M.D., Prof. of Dis. of Eye and Ear in Atlanta Med. Coll. Atlanta, 1875.

The Pathology and Treatment of Chronic Ulcers. By B. A. WATSON, M.D. New York, 1875.

The Influence of the Climate of Colorado on the Nervous System. By CHARLES DENISON, M.D. Denver, 1875.

The Extension Windlass. By CHARLES DENISON, M.D., Denver, Col.

Retention in Utero of the Dead Fœtus, considered particularly with regard to its Effects on the Mother. By G. W. H. KEMPER, M.D., Muncie, Md.

The Physiological Reasons Why: An Essay on School Hygiene, with reference to the Physiological Relations of Age and Sex to Mental and Physical Education, to which the Medical Society of the State of New York awarded the Prize for 1875. By ALEXANDER HUTCHINS, A.M., M.D. Brooklyn, N. Y.

Resumé of a Report on Position, Pneumatic Pressure, and Mechanical Appliances in Uterine Displacements. By HENRY FRASER CAMPBELL, M.D. Atlanta, 1875.

The Gathering, Packing, Transportation, and Sale of Fresh Vegetables and Fruits; Competent Inspection and Free Markets for Producers. By SAMUEL C. BUSEY, M.D., of Washington. New York, 1875.

Preventive Medicine. By CHARLES C. F. GAY, M.D. Buffalo, 1875.

A Report on Trichinosis as observed in Dearborn County, Indiana, in 1874. By GEORGE SUTTON, M.D. Aurora, Indiana.

A Clinical Contribution to the Treatment of Tubal Pregnancy. By T. GAILLARD THOMAS, M.D. New York, 1875.

The Relations of the Nervous System to Diseases of the Skin. By L. DUNCAN BULKLEY, A.M., M.D. New York, 1875.

Alimentation, and the Gastro-Intestinal Disorders of Infants and Young Children. By B. F. DAWSON, M.D., Phys. to N. Y. Free Disp. for Sick Children. New York, 1875.

A New Form of Intra-uterine Stem Pessary, with Remarks upon the General Use of Intra-uterine Stems. By R. A. KINLOCH, M.D., of Charleston, S. C.

History of the Smallpox Epidemic in the city of Mobile, in 1874-5; with Mortuary and Meteorological Tables. Also Notes and Reflections upon Diphtheria and

Typho-Malarial Fever. By JEROME COCHRAN, M.D., of Mobile, Prof. of Pub. Hygiene and Med. Jurisp. in Med. Coll. of Ala. Montgomery, 1875.

Inaugural and Anniversary Addresses delivered before the Medical Society of the State of New York at its Sixty-ninth Session. By the President, GEORGE JACKSON FISHER, M.D., of Sing Sing, N. Y. New York: G. P. Putnam's Sons, 1875.

Address to the Alumni of the University of Virginia at Charlottesville. By Hon. R. M. S. Hunter. June, 1875. Richmond, 1875.

Annual Discourse before the Massachusetts Medical Society, June 9, 1875. By GEORGE H. LYMAN, M.D. Boston, 1875.

Annual Address before the Rhode Island Medical Society, June, 1875. By EDWARD T. CASWELL, A.M., M.D., of Providence. Providence, 1875.

Annual Oration before the Medical and Chirurgical Faculty of Maryland, April 14, 1875. Contribution to the Medical History and Physical Geography of Maryland. By JOSEPH M. TONER, M.D. Baltimore, 1875.

Address before the Medical Association of the State of Alabama. By Dr. J. S. WEATHERLY, President. Montgomery, 1875.

Address before the Ohio State Medical Society, June, 1875. By Dr. W. W. JONES, Toledo, President of the Society. Toledo, 1875.

Biographical Memoir of William W. Gerhard, M.D. Read before the Coll. of Phys. of Philadelphia, May 6, 1874. By THOMAS STEWARDSON, M.D. Philadelphia, 1874.

Transactions of Medical Association of Missouri, 1875. Kansas City, 1875.

Proceedings of Florida Medical Association. Sessions of 1874-75.

Transactions of Medical Society of the State of California, 1874 and 1875.

Transactions of the South Carolina Medical Association, 1875. Charleston, 1875.

Transactions of College of Physicians of Phila. Third Series, Vol. 1. 1875.

Annual Report of the Board of Health for the City of Boston, 1875. Boston, 1875.

Report of the Board of Health of the City and Port of Philadelphia, 1874.

Report of St. Joseph's Hospital, Phila., 1867-1874. By ROBERT B. CRUISE, M.D.

The following Journals have been received in exchange:—

Deutsches Archiv für Klinische Medicin. Bd. XV., 5 u. 6 Heft; Bd. XVI., Heft. 1.

Archiv für Anatomie, Physiologie und Wissenschaftliche Medicin. No. 2, 1875.

Archiv der Heilkunde. Bd. XVI., 5 u. 6 Heft.

Centralblatt für die Med. Wissenschaften. Nos. 28 to 39, 1875.

Allgemeine Wiener Medizinische Zeitung. Nos. 23 to 36, 1875.

Bibliothek for Læger. Femte Bind, tredie Hefte.

Nordiskt Medicinskt Arkiv. Sjunde Bandet, Andra Häftet.

L'Imparziale. Nos. 12 to 17, 1875.

Lo Sperimentale, 1874. Fascic. 5 to 8, 1875.

Archives Générales de Médecine. Juillet, Aout, Septembre, 1875.

Revue des Sciences Médicales en France et l'Etranger, Juillet, 1875.

Annales de Dermatologie et de Syphiligraphie. No. 5, 1874-75.

Archives de Physiologie Normale et Pathologique. Mai, Juillet, 1875.

Annales des Maladies de l'Oreille et du Larynx. Juillet, Septembre, 1875.

Gazette Hebdom. de Méd. et de Chirurgie. Nos. 24 to 37, 1875.

L'Union Médicale. Nos. 70 to 108, 1875.

Le Mouvement Médical. Nos. 24 to 37, 1875.

La Tribune Médicale. Nos. 357 to 368, 1875.

Le Progrès Médical. Nos. 21 to 35, 1875.

Revue Scientifique de la France et de l'Etranger, Nos. 1 to 11, 1875.

The Retrospect of Medicine. January-June, 1875.

The British and Foreign Medico-Chirurgical Review. July, 1875.

The Lancet. July, August, September, 1875.

The Medical Times and Gazette. July, August, September, 1875.

The British Medical Journal. July, August, September, 1875.

The London Medical Record. July, August, September, 1875.

The Sanitary Record. July, August, September, 1875.

The Practitioner. July, August, September, 1875.

Edinburgh Medical Journal. July, September, 1875.

The Glasgow Medical Journal. July, 1875.

The Dublin Journal of Medical Science. June, July, August, 1875.

The Journal of Anatomy and Physiology, May, 1875.

The Indian Medical Gazette. June, July, August, 1875.

Canada Medical and Surgical Journal. July, August, September, 1875.

The Canada Medical Record. June, July, 1875.

- The Canada Lancet. July, August, 1875.
 L'Union Médicale du Canada. Juin, 1875.
 The Obstetrical Journal of Great Britain and Ireland. With an American Supplement. July, August, September, 1875.
 The Boston Medical and Surgical Journal. July, August, September, 1875.
 The New York Medical Journal. July, August, September, 1875.
 The Medical Record. July, August, September, 1875.
 The American Journal of Insanity. July, 1875.
 The American Journal of Obstetrics. August, 1875.
 The Psychological and Medico-Legal Journal. June, 1875.
 Archives of Dermatology. July, 1875.
 Archives of Electrology and Neurology. May, 1875.
 New Remedies. July, 1875.
 The Buffalo Medical Journal. May, August, 1875.
 The Philadelphia Medical Times. July, August, September, 1875.
 The Medical and Surgical Reporter. July, August, September, 1875.
 Half-Yearly Compendium of Medical Sciences. July, 1875.
 The Cincinnati Lancet and Observer. July, September, 1875.
 The Cincinnati Medical News. June, July, August, September, 1875.
 The Clinic. July, August, September, 1875.
 The American Practitioner. July, 1875.
 The Medical Examiner. July, 1875.
 The Chicago Medical Journal. July, August, September, 1875.
 The Chicago Journal of Nervous and Mental Diseases. July, 1875.
 The Indiana Journal of Medicine. July, August, 1875.
 The Detroit Review of Medicine and Pharmacy. July, August, September, 1875.
 The St. Louis Medical and Surgical Journal. July, August, 1875.
 The St. Louis Clinical Record. July, August, September, 1875.
 The Medical Herald. June, July, August, 1875.
 The Kansas City Medical Journal. June, 1875.
 The Peninsular Journal of Medicine. July, August, September, 1875.
 The Pacific Medical and Surgical Journal. June, July, August, September, 1875.
 The Western Lancet. June, July, 1875.
 Virginia Medical Monthly. July, August, September, 1875.
 The Southern Medical Record. June, July, 1875.
 Atlanta Medical and Surgical Journal. July, August, September, 1875.
 The New Orleans Medical and Surgical Journal. July, September, 1875.
 The Richmond and Louisville Medical Journal. June, July, August, 1875.
 Baltimore Physician and Surgeon. July, August, September, 1875.
 The Nashville Journal of Medicine and Surgery. July, September, 1875.
 The Sanitarian. August, September, October, 1875.
 The American Journal of Pharmacy. July, August, September, 1875.
 The Druggist's Circular. July, August, September, 1875.
 The Journal of Materia Medica. July, August, September, 1875.
 The Pharmacist. July, September, 1875.
 The Laboratory. June, July, August, 1875.
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 The Dental Cosmos. July, August, September, 1875.
 The American Journal of Dental Science. July, August, September, 1875.
 The American Naturalist. July, August, September, 1875.
 The American Journal of Science and Arts. July, August, September, 1875.
 The Boston Journal of Chemistry. September, 1875.

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ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

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2. Proceedings of the Florida Medical Association. Sessions of 1874-75. 8vo. pp. 57. Charleston, S.C., 1875.	
3. Proceedings of the Third Annual Session of the Medical Society of Washington Territory. Held in the City of Seattle, on 22d of October, 1874. 8vo. pp. 34. Olympia, 1875	493

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THE
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OF THE MEDICAL SCIENCES
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ART. I.—*Progressive Pernicious Anæmia, or Anæmatosis.* By WILLIAM PEPPER, M.D., Physician to the Philadelphia and to the Children's Hospital; Prof. of Clinical Medicine in the University of Pennsylvania, etc.

THE following cases are offered as a contribution to the study of one of the most obscure and ill-understood classes of disease. The improvements in our knowledge of diagnosis, aided by the introduction of the use of organic chemistry and of the microscope into the study of the physical characters of the blood, have led to much attention being devoted of late years to those remarkable affections which present as one of their chief characteristics a profound change in the composition of this fluid. The result has been the gradual establishment of several hitherto unrecognized diseases, and the much more exact description of other already familiar conditions. But, in spite of this decided advance in our knowledge of the symptoms and lesions of these affections, it cannot be claimed that much progress has yet been made in our acquaintance with their true intimate nature or mutual relations. The group of diseases to which I refer may be said to include—without any pretension to fix positively its limits—anæmia in some of its rarer forms; leukæmia; pseudo-leukæmia, adenia, lymph-adenoma, or Hodgkin's disease; and Addison's disease.

They are usually classified under some such heading as General or Constitutional Diseases, because the entire system is evidently affected. But they are clearly distinguished from other general diseases, such as the great class of fevers, by the fact that they are not dependent, so far as known, upon the introduction of any specific morbid principle into the economy; but are due to an essential and progressive alteration of the blood, usually if not always associated with or dependent upon some lesion of the solids.

In view of the progressive mal-nutrition which marks these affections, the term *Cachexia* (constitutional dystrophy of Jaccoud) is correctly used to describe them. There are other features which may be mentioned as distinguishing these Cachexias. For the most part they arise without definite recognizable cause; they are not self-limited, and have no definite duration; their tendency is to an unfavourable termination, and indeed in regard to most of them it may be said that they are invariably fatal.

In placing anæmia in this list of Cachexias, it must be noted that I have limited myself to certain comparatively rare forms only of that condition. Indeed the name anæmia has been so long used in a vague way to cover all cases where there are pallor of the surface and the evidences of poverty of the blood, that it is necessary to define with some care the different conditions which have thus been included.

In the first place there is the true anæmia which follows hemorrhage. Although it may be objected that there can never be *anæmia* or *bloodlessness* in the strict sense of the term, and that consequently the term *hypæmia* should be used, the important fact is that there is a simple reduction in the mass or amount of the blood without morbid change in its elements, and custom has so sanctioned the use of the term "anæmia" that it seems undesirable to discard it.

Secondly, we frequently observe that, when there has been severe loss of blood, or after prolonged suppuration or continued morbid discharges of any kind, there is a diminution in the red globules, and also a reduction in the proportion of albuminous and saline elements, while the bulk of blood remains normal in consequence of an excess in the proportion of water. To this condition the term *hydræmia* appears most applicable.

But, thirdly, there are also cases met with where, although the mass of the blood may be diminished, the chief change is a progressive and often seemingly causeless diminution in the proportion of the red globules. It is evident in such cases that a profound alteration in the blood-making function is present; and it is most probable that the chemical composition and vital properties of the red globules are also affected, and that there is, at the same time, some alteration in the properties of the white corpuscles, though their number or appearance be not materially changed. Still the diminished proportion of red globules is the most striking feature; and as "anæmia" is a particularly bad name for such a condition, attempts have been made to coin some special term to distinguish it. Thus it has been called *oligocythæmia* (ολιγος, *few*; κυτος, *cell*; αίμα, *blood*), *aglobulia* and *hypoglobulia*. All of these, however, seem open to objection, and have failed to establish themselves in common usage. Jaccoud (Path. Interne, tome ii. p. 820) clearly distinguishes this *essential globular anæmia*, but is, it appears to me, less acute and logical than usual in applying the term chlorosis to it. This name has been for so long a time specially devoted to an affection which presents anæmia among its symp-

toms, it is true, but which has so many distinct peculiarities, and is, on the other hand, wanting in so many of the features of the grave forms of anæmia we are now referring to, that it seems erroneous and confusing to endeavour to include them both under this title. I would therefore much prefer restricting the term "chlorosis" to the disease with which it has long been familiarly connected.

If we were to look merely to the chief physical alteration in the blood, I should be disposed to suggest the name of *anerythræmia* (from *a*, *privative*; *ερυθρος*, *red*; *αἷμα*, *blood*); but it is desirable that the term finally adopted should express not merely this one anatomical condition, but should refer to the pathological nature of the affection. I will postpone, therefore, the suggestion of a name which I trust may meet with approval, until the attempt has been made to determine the pathological nature of the form of anæmia under discussion. (See p. 342.)

In a few cases we are able to clearly explain the production of this globular anæmia. We know, for instance, that some mineral poisons, such as phosphorus, the mineral acids, etc., produce intense anæmia when their toxic effects are thoroughly induced; and that it is probably due to a direct action of the poison upon the globules. But when we leave such cases, we find that an explanation of the various forms of essential globular anæmia demands that we should be acquainted with the manner in which and the place where the red globules are developed: and until this vexed physiological question is definitely settled, it is simply impossible to determine finally the intimate nature and mutual relations of these interesting forms of disease.

For some time the generally accepted view has been that the lymphatic glands and spleen are specially concerned in the maintenance of the normal composition of the blood. It appears that from the lymphatic glands, and probably also from the lymphoid Malpighian corpuscles in the spleen, the white corpuscles are developed and enter the blood. It seems probable that some, at least, of the red globules result from the gradual transformation of the substance of the white cells. Less is known as to the mode and place of death of the red globules, though there is reason to believe that the splenic pulp is specially concerned in this process, while recent observations tend to connect the liver also with it.

But quite recently the brilliant observations of Neumann¹ and Bizzozero² have demonstrated the resemblance between some of the cellular elements of the marrow of bones and of the splenic pulp, and have rendered it probable that the former also is connected with the processes of transformation which the blood globules undergo either in formation or destruction. I will now merely state that this discovery has been so fully confirmed by both physio-

¹ Centralb. f. d. Med. Wiss. 1868, p. 689; Arch. d. Heilk. Bd. x. pp. 68 u. 220.

² Gazzetta Medica Lombarda, 1868, No. 46; 1869, No. 2.

logical and pathological observations, that it may be stated that the marrow of the bones is to be added to the spleen and lymphatic glands as being intimately concerned with the maintenance of the normal morphological constitution of the blood.

Beyond this point physiology has not yet advanced, and one of the most interesting and important fields for pathological research lies in the direction of these cachexias and in attempting to trace their intimate causes, nature, and mutual relations.

My present purpose is to offer a contribution to this important study by calling attention to a peculiar form of anæmia of obscure and fatal character, which has recently been redescribed, as though it were a new affection, under the name of "Progressive Pernicious Anæmia." I doubt not that many who read this article will recall cases in their own experience where, without apparent cause, extreme anæmia developed itself and gradually progressed, in spite of all treatment, to a fatal issue, and where the absence of any gross lesion which was so puzzling during life was corroborated at the autopsy. Many, too, who are familiar with the clinical writings of the last thirty or forty years may recall descriptions of just such cases, recorded under various names, *idiopathic*, *malignant*, or *essential anæmia*, *grave form of chlorosis*, etc., and with a candid avowal of the utter obscurity of their true nature. As the present article has no pretension of being a complete historical memoir upon this form of anæmia, I will limit myself to alluding to the cases of fatal chlorosis by Marshall Hall (Am. ed. *Practice of Medicine*, 1839, p. 367), and especially to the cases of "idiopathic anæmia," to which Addison (Syd. Soc. ed. of his works, 1868, p. 212) refers in the following language :—

"It makes its approach in so slow and insidious a manner that the patient can hardly fix a date to his earliest feeling of that languor which is shortly to become so extreme. The countenance gets pale, the whites of the eyes become pearly, the general frame flabby rather than wasted; the pulse, perhaps, large, but remarkably soft and compressible, and occasionally with a slight jerk, especially under the slightest excitement; there is an increasing indisposition to exertion, with an uncomfortable feeling of faintness or breathlessness on attempting it; the heart is readily made to palpitate; the whole surface of the body presents a blanched, smooth, and waxy appearance; the lips, gums, and tongue seem bloodless; the flabbiness of the solids increases; the appetite fails; extreme languor and faintness supervene, breathlessness and palpitations being produced by the most trifling exertion or emotion; some slight œdema is probably perceived about the ankles; the debility becomes extreme. The patient can no longer rise from his bed, the mind occasionally wanders, he falls into a prostrate and half-torpid state, and at length expires. Nevertheless, to the very last, and after a sickness of perhaps several months' duration, the bulkiness of the general frame and the obesity often present a most striking contrast to the failure and exhaustion observable in every other respect. With perhaps a single exception, the disease, in my own experience, resisted all remedial efforts, and sooner or later terminated fatally. On examining the bodies of such patients after death, I have failed to discover any organic lesion that could properly or reasonably be assigned as an adequate cause of such serious consequences; nevertheless, from the disease having uniformly occurred in fat people, I was naturally led to entertain a suspicion

that some form of fatty degeneration might have a share, at least, in its production; and I may observe that, in the case last examined, the heart had undergone such a change, and that a portion of the semilunar ganglia and solar plexus, on being subjected to microscopic examination, was pronounced by Mr. Quekett to have passed into a corresponding condition."

This admirable passage is extracted from Dr. Addison's classical memoir "*On the Constitutional and Local Effects of Disease of the Supra-renal Capsules*," published in 1855; and it gains interest from the fact that it was while studying these cases of idiopathic anæmia that he observed the equally curious cases of anæmia with bronzing of the skin, which he showed to be connected with disease of the supra-renal capsules, and which are now known the world over by his name. It also shows very clearly that this form of anæmia was well recognized, was occasionally encountered, and was made the subject of public clinical discussion before 1850 (although not published until 1855). Unfortunately no microscopic examination of the blood was made.

About this time, however (1845 to 1850), Virchow and Bennett called attention to leucocythæmia or leukæmia, and since then, until very recently, nearly all cases of progressive fatal anæmia have been in some way connected with that interesting disease. It will be remembered that leukæmia is characterized by an extreme increase in the number of white corpuscles in the blood, together with a marked reduction in the number of red globules and the mass of the blood, and that three varieties, *splenic*, *lymphatic*, and *medullary* or *myelogenic*, have been described, according as the chief seat of the lesions is found in the spleen, the lymphatic glands, or the marrow of the bones respectively.

Subsequently it has been found that there exists a form of cachectic anæmia with diffused enlargement of the lymphatic glands (such as occurs in lymphatic leukæmia), which was first described by Dr. Hodgkin (*Medico-Chirurgical Transactions*, vol. xvii. p. 68, 1832), and which may pass through all its stages to a fatal issue without any increase in the proportion of white corpuscles in the blood. This variety of anæmia has been described by several writers under the names of Hodgkin's disease (Wilks); Lymphatic Anæmia; Adenia (Trousseau); Pseudoleukæmia (Cohnheim and Wunderlich). Still further, it has been found that in some rare instances this progressive anæmia, without leukæmic complication, may be connected with enlargement of the spleen instead of the lymphatic glands, thus constituting a *splenic anæmia* (Griesinger), *splenal cachexia* (Wood), or *splenic form* of pseudoleukæmia.

Finally, it has been shown by Ponfick¹ and Wood² that in some cases of pseudoleukæmia there may be not only lesions of the lymphatic glands

¹ Ü. d. Sympathischen Erkrankungen des Knochenmarkes bei inneren Krankheiten. Virchow's Archiv. 56, Bd.

² On the relations of Leucocythæmia and Pseudoleukæmia, Amer. Journ. Med. Sciences, Oct. 1871, p. 373.

and of the spleen, but also an affection of the marrow of the bones similar to that which is found in some cases of leukaemia. It appears thus that there exist corresponding series of forms of these two affections, as follows :—

Splenic }
Lymphatic } Leukæmia.
Medullary }

Splenic }
Lymphatic } Pseudoleukæmia.
Medullary }

It is of course understood that, in many cases, lesions of two or even all three of these tissues are associated.

Now it will be found, I believe, that the symptoms of these cases of so-called pseudoleukæmia differ from those of "idiopathic anæmia" as described by Addison, or from the symptoms of the cases I will relate, only in the fact that enlargement of the spleen or lymphatic glands exists in the former.

It becomes then extremely important to study carefully this singular form of anæmia, the more so as there is reason to believe that its nature has been overlooked from Addison's time down to within a few years. I have myself met with three cases which are undoubtedly of this nature. And quite recently, moreover, a series of articles has been published containing the careful descriptions of cases of intense and fatal anæmia with fatty degeneration of the heart and other organs, which it is easy to see are identical with the affection described by Addison. Among the references which I have to such recent articles, the first in order of publication is the following case of "oligæmia," by Dr. Luigi Corrazza,¹ of Bologna, in 1869.

A young woman, 24 years of age, had never entirely regained her health since an attack of continued fever at the age of 15 years. Subsequently she bore four children in five years, and about the middle of her last pregnancy had a severe attack of jaundice, which soon passed away, but left the skin of a dirty-yellowish colour. She was confined in November, 1867, but remained feeble, suffering frequently with diarrhœa, and when admitted to the hospital in January, 1868, presented the following symptoms: No emaciation, surface straw-yellow; marked dyspnœa and restlessness, headache, giddiness on rising, palpitation of heart, sense of weight and distress in stomach; anæmia. The temperature was normal; pulse and breathing accelerated; anæmic murmurs in the large vessels; the liver somewhat enlarged; the spleen and lymphatic glands not affected, and the extremities œdematous. These symptoms became aggravated, with vomiting, increased depression of circulation, and dyspnœa and somnolence, and death ensued on January 27th. At the autopsy there was œdema of the lungs, and some serous effusion in the pericardium and pleural and peritoneal cavities. The blood was very liquid. The heart, liver, and kidneys were fatty. The spleen was slightly swollen.

In the paper of Dr. Wood last referred to, which presents one of the most thoughtful and original contributions to the study of this obscure

¹ Storia di un caso di oligemia con riflessioni su quest' affezione, sulla clorosi e sulla degenerazione grassosa degli organi, Bologna, 1869. Quoted at length in Meissner on Leukæmia and Pseudoleukæmia, Schmidt's Jahrb., 1872, Bd. 155, s. 333.

class of affections, there is one case at least which corresponds to the essential anæmia we are now considering.

Shortly afterwards, Gusserow¹ published a valuable article containing the careful clinical histories of five fatal cases of intense progressive anæmia, all occurring in pregnant women. In these cases no jaundice was observed, while, on the other hand, albuminuria was detected in one case, and there was some febrile elevation of temperature in several instances; but, with these exceptions, the patients presented the same train of symptoms, without any recognizable organic lesion, which has just been quoted from Corrazza's case. Careful post-mortem examination was made in every instance, and revealed the same conditions of fatty degeneration of the heart and sometimes of the liver and kidneys, with œdema of the lower lobes of the lungs and small amounts of reddish serous effusion into the various cavities. The blood was diminished in quantity; there was no increase in the proportion of white corpuscles, but great diminution in the red globules. The spleen was slightly enlarged, but with no characteristic change in its pulp; the lymphatic glands were not affected.

In the following year, 1872, Biermer, of Zurich,² published a very able memoir, based upon the study of fifteen cases of fatal anæmia which he had met with in five years. The majority of his cases occurred in women, and, as in Gusserow's cases, child-bearing seemed to predispose to the disease. He also noticed that in some instances the cause appeared to be chronic follicular catarrh of the intestines. He added to the clinical history of the disease that, late in its course, ecchymoses occasionally appear in the retina or under the skin, and sometimes hemorrhages may occur from the nose or kidneys. But in every essential particular—the gradually and inevitably fatal progress, absence of emaciation, extreme diminution of red globules without increase in number of white corpuscles, absence of lesions of spleen or lymphatic glands, presence of intense anæmic murmurs, passive dropsy, and other signs of alteration of the blood and failure of heart-power, and finally, in the detection of fatty degeneration of the heart and of various organs, as the only organic lesion of the solids after death—in every particular the cases of Biermer agree with those above quoted. With the idea that the affection was a new one, Biermer applied the name "Progressive Pernicious Anæmia" to it. But when the close resemblance between these recent reports and the older but equally clear description by Addison of "idiopathic anæmia" is carefully considered, the conclusion seems to me unavoidable that they are one and the same affection. It is not a little melancholy, if this conclusion be correct, to find that, in the native land

¹ Ü. hochgradigste Anämie Schwangerer, Arch. f. Gynækologie, 1871; Hft. 2, p. 218.

² Correspondenzblatt für Schweizerische Aerzte, Jahrgang 2, 1872, No. 1.

of that great clinical master, one of the leading journals¹ accepts "progressive pernicious anæmia" as a disease *sui generis*, and observes that no case has as yet been reported in Great Britain.

Still more recently, Immermann,² of Basle, has published two cases of identical character; and Zenker³ furnishes one more with complete and minute post-mortem examination.⁴ In an article published recently (*Boston Med. and Surg. Journ.*, Jan. 14, 1875, p. 33), Dr. James R. Chadwick, of Boston, reports a case of fatal anæmia, apparently due to repeated hemorrhages following delivery, the symptoms and course of which, as well as the results of post-mortem examination, show it to have been identical in nature with the cases hereafter reported. In the *Practitioner* for January of the present year (p. 22), Dr. Broadbent, in a paper on the "Therapeutic Uses of Phosphorus," describes two similar cases, one of which was studied until its fatal termination, and the diagnosis verified by the absence of any organic disease to explain the anæmia. In neither this case nor the one reported by Dr. Chadwick was the marrow of the bones examined. I should also add that in a remarkable memoir, Ponfick⁵ has described, from a purely anatomical point of view, at least one or two cases of this form of anæmia, under the name of "The Anæmic Form of Fatty Degeneration of the Heart."

Having now given a hasty sketch of this peculiar affection, and a sufficient number of references to recorded cases to show its comparative frequency, I propose to present the histories of three cases which have recently come under my observation, and then to consider more in detail its symptoms and pathology.

CASE I. *Intense anæmia (of malarial origin?); irregular fever, uncontrolled by quinia; cedema, gastric disturbance, palpitation, hemic murmurs, hemorrhages, somnolence, coma, and death; no enlargement of spleen or lymphatic glands. No autopsy.*—The following history is chiefly based upon notes kindly furnished me by my friend Dr. R. G. Curtin, under whose care the case was, and with whom I visited the patient in consultation.

Eliza Farrell, aged twenty-six years, single, a dressmaker by occupation, and a tall, stout, hardworking woman, with a good family history. She lived on the outskirts of Philadelphia, in a somewhat malarious neighbourhood. Her father, who lived in the same house, had malarial neuralgia in 1872. In October, 1872, she applied at the Hospital of the University of Pennsylvania with a severe attack of bronchial catarrh, with some loss of flesh; there had been no hæmoptysis, the expectoration being copious, white, and frothy. There were very marked bronchitic râles over both lungs. The attack proved obstinate, but in the course of five months she seemed to have regained her health.

In September, 1873, she came again, complaining of great weakness, which had been increasing for some time. She had also anorexia and irregular fever

¹ Medical Times and Gazette, Nov. 21, 1874, p. 582.

² Deutsches Archiv. f. Klin. Med., 13ten Bd., 3tes Hft., 1874, s. 209.

³ According to the Medical Times and Gazette, a similar case, without autopsy, has been published by Gfrörer of Heilbronn, but I have not been able to discover the original record.

⁴ Id. Op., p. 348.

⁵ Ueber Fettherz, Berlin Klin. Wochenschrift, 1873, No. 192.

in the afternoons, and was decidedly anæmic. She was ordered arsenic, iron, and quinia.

A week later, September 27, she returned, stating that she felt much weaker, and that she now had slight chills in the afternoon, followed by more fever. Her feet and face were puffy, and there was a soft systolic cardiac murmur. The urine was free from albumen. The quinia was increased to sixteen grains daily.

October 11, she seemed better, and was free from fever. Her appetite was better and her feet less swollen, but she was still as weak and anæmic as before. She was ordered liq. ferri acetatis.

After this she grew steadily worse again, and was soon obliged to keep to her bed. She had several hemorrhages from the gums, and when she menstruated the flow was excessive. Her appetite and power of taking food diminished, and the œdema increased decidedly.

On November 4, her condition was as follows: The skin and mucous membranes seemed literally bloodless; the face and feet were very œdematous; the urine was free from the least trace of albumen; she had recently had a hemorrhage from the gums; she could take but very little food without inducing vomiting; the tongue was covered with a white, pasty fur; the bowels had been quiet throughout, though easily moved; there was *no enlargement of the spleen*; the mind was clear but sluggish, and there was extreme prostration; there was still irregular febrile action in the latter part of the day, disappearing and reappearing at irregular intervals.

November 14, she was first seen by me in consultation with Dr. R. G. Curtin. She had been steadily growing worse, and was now confined to bed, and any exertion caused faintness, and occasionally nausea and vomiting were caused merely by rising in bed. If possible, she was even more anæmic than before, and the bloodless condition of the cutaneous and mucous surfaces was truly remarkable. There was but little emaciation. There had been more hemorrhages from the gums. She vomited frequently, and could take but little nourishment; œdema of feet and face marked; no enlargement of spleen or lymphatic glands, or evidence of organic disease of any organ; no albuminuria; there were no petechiæ or ecchymoses; the action of the heart was rapid and very feeble; the pulse small and gaseous. There was a very loud anæmic murmur over heart, and remarkably strong venous hum was heard over the large veins, as the jugulars and subclavians. There was also a continuous, quite distinct, humming roar audible over the whole skull during arrest of breathing as well as during respiration; this was especially strong over the longitudinal and lateral sinuses. The patient was conscious of this and described it, saying that the constant roaring was very unpleasant.

The mind was clear, but could be fixed only for a short time on any subject. The patient lay for the most part in a heavy sleep. Microscopic examination showed absence of any increase in white corpuscles, but great diminution in the red globules.

November 28. Increasing weakness and hebetude of mind; condition otherwise much the same; no albuminuria or enlargement of spleen. Has continued to take large doses of quinia and iron, and utmost care has been used to administer nourishment both by the mouth and rectum.

December 4, there was a sudden increase in the swelling of the body, followed by coma, which persisted until her death occurred the following day.

Unfortunately no *post-mortem* examination was permitted, but still it is difficult to doubt the nature of the affection. Although the place of her residence was somewhat malarious, and it may be that malaria may have originally had somewhat to do with breaking down her nutrition, the course of the case, the utter inefficiency of quinia, iron, and arsenic, and the absence of enlargement of the spleen, made it clear that at least the later period of her illness was not merely malarious in character.

CASE II. *Vague symptoms of failing health ; slight sunstroke ; jaundice ; followed by more rapid failure in strength and progressive anæmia ; dyspnœa ; palpitation ; nausea ; vomiting ; slight œdema ; faintness and giddiness on rising ; hæmic murmurs ; very slight fever ; no leukæmia, but extreme anæmia ; very slight emaciation ; delirium ; death. No affection of lymphatic glands ; slight enlargement of spleen ; fatty degeneration of heart, liver, and kidneys.*—W. G., æt. 57 at time of his death, June 12, 1872. He was a native of England, but came to America at the age of 14 years. He was a short, heavily built man of rather sanguine or plethoric constitution. He enjoyed unusually vigorous health, having had no sickness excepting an attack of measles in childhood ; and since then having never had occasion to consult a physician until his last illness. He lived continuously in Philadelphia, and both his residence and place of business were in healthy localities. He was not exposed to malaria or to any metallic poison ; being engaged at the head of a large wholesale crockery business. He was a very hard worker, frequently being at his store from 8 A. M. to 10 or 12 P. M. He was very successful and made a great deal of money ; though he lost much by endorsing. He was never rendered anxious or overstrained ; but was always amiable and took the world very easily. He was very domestic in his habits ; was married, and had nine children, who all survived him, though subsequently the youngest son died of acute caseous pneumonia. There is not the slightest suspicion of his ever having had syphilis. He was temperate in his habits, eating heartily of simple food, and drinking ale moderately. He had never suffered from chronic diarrhœa.

For two years previously his sons had assumed chief charge of the business, and in consequence he was much less occupied than it was his habit and wish to be ; and this enforced idleness after a life of great activity was irksome to him. In July, 1871, while sitting in a chair in the hot sun overseeing some repairs to his store, he had a slight sunstroke or syncopal attack. He grew faint and almost fell from the chair, but recovered in a few hours and did not seem to suffer from it afterwards. His wife states, however, that even for some months before the above attack, she remembers that he would occasionally strike himself over the breast, and cough, saying that there was something there which would eventually cause his death. It is probable that during this time there was a slow and gradual failure in vigour, although he never alluded to any symptom of ill health. In the following March (1872), he began to be jaundiced. The yellowness came on without apparent cause, with no pain or symptom of calculus. The urine was high-coloured, but the feces were not pale. He was constipated, his appetite began to fail, and, though he continued to attend to business, he lost strength rapidly and his flesh failed and grew flabby and soft. After about a month, the yellowness gradually diminished ; but left the surface of a deathly pale color, with a tinge of sallowness, strikingly like the colour of a corpse. His weakness increased, but he still continued to attend to business until towards the middle of April, when he fainted in his store and had to be carried home. He then only left his house to drive in the afternoon, but soon after fainted while in his carriage, and thenceforward did not leave his house. His weakness increased so much that during the first week in May he was compelled to go up stairs on his hands and knees, as walking up exhausted him so greatly. He now noticed that any exertion produced great nausea, with retching and vomiting ; and indeed, for a couple of weeks after the

development of the peculiar corpse-like appearance, his appetite was lost entirely so that he loathed food and frequently vomited after having forced himself to eat. Greasy food was especially repugnant to him.

I saw him first on May 10th. He was then confined to his bed. He made no complaints of pain in head or elsewhere, nor indeed of anything but constant sense of great weakness. Every exertion, even that of rising in bed, caused great faintness. The entire surface was deathly pale, with a faint sallow, cadaveric hue. The conjunctivæ were pearly white; the mucous membrane of the mouth entirely bloodless. There were no ecchymoses or petechiæ on any part of the surface. Vision was not disturbed, but no ophthalmoscopic examination was made. There was a distinct puffiness of cellular tissue under eyes, but no œdema in any other part. The tongue was intensely pale, moist, and clean. There was no appetite; and food was ill borne, great care being needed to avoid exciting vomiting. The abdomen was rather large and distended with flatus, and was free from any serous effusion. The bowels were quiet and rather costive, but were readily moved by enemata. The movements were small but apparently normal, containing no excess of free fat, and not pale in colour. There never was any hemorrhage from the bowels. The urine was no longer dark-coloured, but was of normal character and entirely free from albumen. There was no pain complained of in abdomen. The liver and spleen were not enlarged or sensitive.

Respirations were quiet, though easily disturbed by any exertion; no cough; physical examination showed that the lungs were entirely healthy. The heart's action was somewhat frequent, when the circulation was quiet; the pulse was about 90, but exertion readily disturbed it. The area of dulness was normal or very slightly increased; the apex beat very feeble; on auscultation no valvular murmur was detected; the first sound was weak and poorly developed; over the base a soft hæmic murmur was audible, which could be traced along the pulmonary artery; no venous hum could be detected in the neck. Microscopic examination of the blood showed no absolute increase in number of white corpuscles, but very advanced decrease in the red corpuscles. The fluid was thin and dirty-red in colour. The record of the temperature has been lost, but it was but slightly above normal.

The treatment ordered consisted of careful alimentation by stomach and rectum; carbonated water, bismuth, soda and creasote mixture at different times to relieve nausea, which was held in check so that vomiting was comparatively rare towards close of life. The following was also administered: R. Quinæ sulph. gr. ij; strychniæ sulph. gr. $\frac{1}{40}$; tinct. ferri chloridi, gtt. viij; acid. muriatic. dilut. gtt. v; syr. zingiberis, fʒi; aquæ, fʒiij. Ft. sol. S. thrice daily in water. This was well borne for a while; subsequently various changes were made in the form of iron and quinia, but these were the drugs chiefly relied on. Transfusion was not performed. The case was regarded as one of idiopathic anæmia with advanced fatty degeneration of the heart. The jaundice was regarded as having been of hæmic origin.

From this time until death, June 12, 1872, rather more than four weeks later, no marked change occurred in his symptoms. The vomiting was checked, but no appetite returned. The anæmia grew more and more profound. No hemorrhage took place, but examination of the blood showed increasing alteration, but without any increase in the proportion of white corpuscles. There was no improvement in his strength. Towards the

close the feet grew œdematous and a small amount of ascites supervened. Death finally occurred from sheer asthenia, with mild wandering delirium. The degree of loss of flesh remained moderate until the end.

Autopsy.—Intense anæmia as above described. There was very little blood in the vessels, and this was thin and watery, of light dirty-red colour, almost without coagula, even in right side of heart. Microscopic examination gave same results as before.

There was still a considerable amount of adipose tissue in omentum, abdominal walls, and other parts of subcutaneous tissue.

Head.—Brain very pale and bloodless; increase of subarachnoid effusion.

Thorax.—*Lungs* healthy, very pale and anæmic, excepting posterior part of lower lobes, which were œdematous and congested; no pleural effusion; a small amount of clear serum was found in the pericardial cavity; and the surface of the heart presented a number of small ecchymoses. The *heart* was slightly enlarged; presented a considerable amount of fatty accumulation on its outer surface, and on being removed from the chest was found so flabby and relaxed as not to retain shape at all when laid on a flat surface. Its cavities were slightly dilated, and contained some thin watery blood with a few soft small clots. The muscular tissue was very soft, tore readily, was of a pale yellowish-red colour, and on microscopic examination presented an *extreme degree of fatty degeneration*. The aorta and large veins were healthy.

The *liver* was of full size, soft, friable, pale and yellowish in patches. Examination showed extreme general fatty degeneration of the tissue. The gall-bladder contained thin pale bile, no calculi. The *kidneys* were rather large, pale, and very far advanced in fatty degeneration.

The *supra-renal capsules* were of full size, apparently healthy, presenting no characteristic cheesy degeneration.

The *spleen* was somewhat enlarged (half more than natural), its pulp was dark and much softened; no leukæmic lesions present.

The *lymphatic glands* were nowhere involved. The *marrow* of the bones was unfortunately not examined.

The characters of this case are so well marked as to need no comment. At the time that both this and the previous case occurred, no report of the recently observed cases of Gusserow and Biermer had reached my notice, and I find that I have simply headed the latter record with the title "*pernicious anæmia, with fatty degeneration*." During life, the diagnosis was very obscure, except so far as the cardiac and hæmic lesions were concerned, and so far as an utter absence of the symptoms of organic disease of any other part. The case was regarded as one of acute fatty degeneration, dependent upon primary intense anæmia, and I was inclined to refer the occurrence of jaundice, without apparent cause and followed by such rapid and intense destruction of red globules, to a hæmic origin. The slight sunstroke or syncopal attack cannot, it seems to me, be regarded as in any way the cause of the subsequent cachexia, but as merely a sign of insidious failure in strength and vigour and power of resistance which had previously been slowly progressing. Unfortunately it was impossible to make any special examination of the marrow of the bones. The entire absence of any increase in the number of white corpuscles was repeatedly determined.

In the following case, of recent occurrence, a more minute study of the symptoms and lesions was made; and it will, I trust, prove of interest as showing for the first time, so far as I know, the important fact that this peculiar form of progressive anæmia may be associated with changes in the marrow of the bones such as has been shown to exist in certain cases of leukaemia.

CASE III: *Chronic follicular catarrh; attacks of hepatic colic; mental and bodily overstrain; apparently causeless anæmia and debility; tendency to syncope; transient œdema; hæmic murmurs; dyspnœa; irregular fever; somnolence; transfusion, with temporary relief; increasing debility; echymoses; wandering delirium; second transfusion; death in twelve hours. Calculus retained in gall-bladder, with chronic suppuration of the sac; enlargement of solitary follicles of intestines; intense anæmia; fatty degeneration of heart, liver, and kidneys; slight swelling of spleen; no affection of lymphatic glands; marked affection of medulla of bones.*—E. C., æt. 50, engaged in iron founding. He and his brother have worked intensely hard, elaborating patents and carrying heavy business cares. He always discharged the financial part of the business. A man of rather spare frame, never weighing over 130, lithe and active in body and mind. Never enjoyed what could be called vigorous health. At age of twenty-five years he had a very severe attack, attended with vomiting, pain in right hypochondrium, but with no jaundice. Since then he has never been so well as previously, but every year or two has had a similar but less severe attack. In no case did jaundice follow. There has been, besides, a weak condition of the bowels ever since, the stools being habitually undigested and thin, though rarely amounting to more than one a day. No distinct account can be had of any hemorrhage from the bowel having occurred. He suffered for many years (twelve to fifteen) from an obstinate form of psoriasis, chiefly affecting legs, and to a less extent the arms and trunk. These affections did not diminish his energy and activity. He lost nearly all of his upper teeth twelve to fifteen years ago, and could not be induced to wear false ones, so that this must have aided in interfering with his nutrition by preventing complete mastication. He was married, and had a healthy family. He was strictly temperate in every respect, and resided in a healthy suburb of Philadelphia.

He seemed in his usual health till the early part of February, 1875, although subjected to unusually severe strain during the past two years of business depression. About the tenth of that month he did an unusually hard day's work, and noticed next morning that he was feeling poorly and weak. He consulted his sister, Dr. Hannah T. Croasdale, who prescribed rest and tonics. However he continued as usual at his business until early in April, when his debility had become so extreme that he was compelled to remain in his chamber. For some short time before this, he noticed shortness of breath on exertion; and on April 10, there was a rather abrupt appearance of œdema of face and extremities. There had been no diarrhœa or hemorrhage, or exhausting influence of any kind to produce this steady increase in prostration. At the same time, an alarming state of pallor of surface developed itself, the skin becoming excessively pale, with a faint sallow tinge. After the occurrence of the œdema he remained for the most part in bed until his death. The swelling rapidly disappeared, and there was no return of it subsequently. He continued able to take nourishment naturally; was free from suffering, and took interest in everything, retaining his faculties perfectly.

During this time he took iron in various forms and in quite large doses, but it did not seem to agree with him; his stools being very black and his appetite failing. The heart's action was feeble, with occasional intermissions; and a strong hæmic murmur was heard over the base. The pulse was weak—not much accelerated. No record of bodily temperature was made; it is probable that he had slight irregular fever. There was no vomiting. He also had two short attacks of pain in right hypochondrium, with nausea. His ability to take food steadily declined, and latterly he was obliged to be nourished in great part by enemata of beef extract.

I first saw the patient April 30, 1875, in consultation with Dr. Charles H. Thomas and the patient's sister, Dr. H. T. Croasdale, at 12 o'clock noon. A few hours previously he had been subjected to some exertion—having his clothes carefully changed and being gently carried from one room to the next. This was followed by dangerous syncope—entire unconsciousness lasting for a moment. Brandy was given in small quantities every 20 or 30 minutes, and he gradually rallied to a slight degree. He was found lying in bed with his head slightly lowered. His facies was strictly corpse-like—deathly pale, with a trace of sallowness—but without a vestige of healthy colour. Conjunctivæ pearly white; lips blanched; gums bloodless; tongue dry, very pale, coated on dorsum. No coolness of surface. Lies with eyes closed, and dozes constantly; can be readily aroused, and opens eyes, looks intelligently, understands, and answers clearly. Has sense of intense weakness; and this is so much aggravated after sleep that he is afraid to sleep more than a few minutes, and is accordingly awakened every 30 minutes.

Respirations are regular, quiet, with healthy vesicular murmur; pulmonary resonance unusually marked. Pulse weak, quick, compressible, 96 to 102 in minute, somewhat irregular, with occasional intermissions (1 to 3 in every minute). Heart's action similar; soft, musical, hæmic murmur at base, heard along pulmonary artery and less strongly over aorta; no venous hum in neck; no murmur heard on auscultating head. No emaciation, the degree of flesh being very little less than when in ordinary health.

There is no œdema of any part. No petechiæ or ecchymoses.

Abdomen normal; no ascites; liver not enlarged, nor sensitive; spleen slightly enlarged. Nausea and vomiting provoked by any exertion. Frequent administration of small quantities of brandy was directed, together with beef extract by enema.

Transfusion was recommended without delay, and at 6.30 P. M., same day, was performed by Drs. T. G. Morton and C. T. Hunter.

At 6.25, just before operation. Pulse 98, 2 intermissions in minute; temperature in right axilla 101° F. Microscopic examination of blood showed no real excess of white corpuscles, but some relative excess in consequence of extreme reduction in number of red globules; there was but little formation of rouleaux; the individual corpuscles seemed pale, and less biconcave than normal; no abnormal elements were seen. The power used was a Tolles' one-fourth inch.

His brother furnished the blood, which was carefully defibrinated, and slowly injected into right median basilic vein. The operation was effected without the least inconvenience. During entrance of blood there was at first some increased frequency of pulse to 108, but it then fell to 90, becoming stronger and fuller, and losing the intermissions. He experienced some sense of increased strength; but no change occurred in his appearance.

At 7.30 P. M., one hour afterwards, he complained of chilly sensations

("creeps") along spine—succeeded at 7.45 by free vomiting and copious and repeated involuntary evacuations of the bowels, with abdominal pain. The pulse rapidly increased in frequency to 120, becoming much weaker and markedly irregular, and the surface grew much hotter. Sp. ammoniæ aromat. and brandy were given, and hot-water bottles placed around him, with but slight effect. At 8.30 a suppository containing morphiæ sulph. gr. $\frac{1}{4}$ was given.

At 9 P. M., abdominal pain relieved; necessary to keep windows wide open to furnish air; temperature in right axilla $104\frac{1}{4}^{\circ}$ F.; pulse 128, weak and compressible, and intermittent; skin moist.

By 11.30 P. M., the pulse had fallen to 100, still weak and intermittent.

May 1, 1875. At 1 A. M., pulse 104; respiration 20; temperature 101° .

At 2.30 A. M., pulse 92, 2 intermissions.

At 5 A. M., pulse 90, full and regular—no intermission; temperature 100° . During night he slept, being awakened every half hour to avoid excessive depression. At 4 A. M. he said he felt undoubtedly better. He took brandy and water every half hour, and a small amount of beef extract by mouth. No enemata were given. The pulse lost somewhat in volume in early morning, and one or two intermissions were noted in each minute.

The first urine voided after the transfusion was unavoidably lost; and it was not examined until early on morning of 2d, when it was found clear and amber-coloured, sp. gr. 1018, free from albumen.

During the remainder of the day, there was steady and decided improvement, as may be seen by following record:—

	Pulse.	Respiration.	Temp.
At 11.30 A. M.	96, 2 intermissions,	18	101°
3 P. M.	98, no intermissions,	18	
6 P. M.	88, no intermissions,	18	101°

During this day, he was nourished by the whites of uncooked eggs (of which five were taken) stirred with brandy and water, to which occasionally a little cream was added; and enemata of beef-tea with a few drops of laudanum. The entire amount of brandy taken in last twenty-four hours was fʒij. Elix. bismuth, pepsin, and strychnia in fʒj doses was given five times a day.

2d. Had passed a good night, sleeping nearly two hours at a time. His pulse was of fair volume, without intermissions, and varied from 93 to 97; respirations were regular, and continued at 20 in the minute; temperature at midnight was $100\frac{1}{2}^{\circ}$; at 6 A. M., 99° ; at 3 P. M., $99\frac{3}{4}^{\circ}$. He urinated quite freely; the secretion was clear and free from albumen, but was not examined microscopically. His intellect was clear, and he expressed himself as feeling stronger. There was still extreme desire for fresh cold air, so that all the windows in his room were kept open day and night. He complained of no pain. No petechiæ or hemorrhages. He took food as on previous day, and without nausea or vomiting. Bowels quiet; rectum retentive; enemata of beef juice fʒij, tr. opii. gtt. vi, quiniæ sulph. gr. iv, given three or four times in twenty-four hours.

3d. General condition seemed slightly more favourable. He slept better and with less exhaustion. Bowels opened spontaneously and naturally. Took nourishment more willingly; and also retained the enemata of beef-tea. Pulse continued about 96, without intermission; temperature varied from $98\frac{1}{2}^{\circ}$ to 100° . No positive diminution in degree of anæmia.

4th. Did not seem quite so well. Had passed a fair night, but was rather weak and chilly this morning; still craved fresh air and felt faint if

the windows were closed at all. Pulse varied from 95 to 100, and again presented one intermission in each minute; temperature 99° . Less relish for food. Tongue more thickly coated, and brownish and dry on centre of dorsum; anæmia intense. Same nourishment was continued; with enemata as before. He was now ordered tr. ferri chloridi, gtt. iij, liq. pepsin, fʒj, t. d. after meals, in place of the elixir he had been using.

5th. A marked change in weather had occurred, and it was thought he had taken cold in consequence. He seemed decidedly less well, and had greater sense of prostration. Pulse had risen to 106 or 108, was less full, and extremely feeble; respirations had risen to 25; temperature rose from $101\frac{4}{5}^{\circ}$ at 8 A. M., to $103\frac{2}{5}^{\circ}$ at 8 P. M. He urinated more frequently—about every two hours—but none was secured for examination; bowels quiet. The same nourishment (raw eggs, cream, and brandy; milk and lime water; beef-juice) was continued, but the amount of brandy was increased by adding half fluidounce to each enema; the amount of quinia by enema was increased to gr. xvi daily, and tr. digitalis gtt. viij every four hours was substituted for the iron. There was no cough or sign of pulmonary trouble. The anæmic heart-murmur was distinct. The tongue continued brownish and dry. He was also ordered a suppository of morphia gr. one-eighth at night.

6th. The febrile exacerbation seems to have diminished, the pulse still somewhat accelerated, 100 to 102. Has had a very comfortable night, and feels refreshed. General condition much the same. Tongue has quite thick brownish coating in centre. No appetite, but no nausea or vomiting. Loathes alcohol. Has had natural, spontaneous movement of the bowels. A slight livid appearance was noted this morning in face. It was decided to repeat the transfusion, and at 12.40, fʒvss defibrinated blood was injected by Drs. T. G. Morton and C. T. Hunter into *left* median basilic vein at bend of elbow. Dr. S. Weir Mitchell was also present, and kindly assisted in making the observations on the pulse during the operation. Just before operation temperature was $101\frac{1}{5}^{\circ}$; pulse had risen from excitement from 108 to 120, not intermittent.

During injection of first syringe-ful, pulse remained 120, but grew intermittent, losing three or four beats in minute.

During injection of second syringe-ful, pulse rose during first quarter of minute to 33; and during second quarter to 35.

After the injection of three syringe-fuls a pause was made for about two or three minutes, during which pulse rapidly fell to 108 per minute.

The third syringe-ful was injected very slowly, occupying just one minute; during this the pulse was in the successive quarters, 28, 27, 28, 28; and during injection of fourth syringe-ful, 29, 29, 27, 27.

The operation was accomplished without pain or discomfort to the patient. As soon as it was over he said he was glad it had been done, and that he felt a little stronger. No perceptible change in appearance. Pulse continued to fall to 100, and then in course of thirty minutes was 104, with one or two intermissions.

At 1.30, very soon after the operation, nausea began, and he soon vomited; at same time there was rumbling in bowels, with involuntary discharge of fluid feces. These symptoms at first seemed much less severe than after the first transfusion. But in a short time the pulse and temperature began to rise (see table); his color grew livid, with great restlessness and complaints of pain in the head. This restlessness increased, and was very distressing from two until six o'clock, with constant tossing of hands about, although prostration was evidently steadily increasing. Later he grew more quiet, and at 9.30 he was unconscious.

Date.	Hour.	Pulse.	Resp.	Temp. F.	Remarks.
1875. Apr. 30	12 noon 6 P. M. 9 P. M.	96-102, intermittent 98, intermittent 128, interm't & feeble	20	101° 101° 104 $\frac{1}{4}$	Transfused f $\frac{2}{3}$ ivss at 6.25 P.M. Probably higher about 8 P.M., but not observed.
	11.30 P. M.	100, intermittent	20	...	Temperature falling.
May 1	1 A. M. 2.30 A. M. 5 A. M. 11.30 A. M. 3 P. M. 6 P. M. 12 midnight	104, intermittent 92, intermittent 90, regular, more full 96, intermittent 98, regular 88, regular 94, regular	20 ... 18 18 18 20	101 100 101 101 101 100 $\frac{4}{5}$	
May 2	6 A. M. 3 P. M. 12 midnight	96, regular 96 96, intermittent	20 20 20	99 99 $\frac{3}{5}$ 98 $\frac{4}{5}$	Condition comfortable.
May 3	9 A. M. 6 P. M. 12 midnight	90, intermittent 96, regular 96, regular	18 20 ...	99 100 ...	Condition very satisfactory.
May 4	3 A. M. 6 A. M. 12 noon 6 P. M. 11 P. M.	100, feeble 98 94, intermittent 100, regular, weak	20 20 18 20 ...	99 $\frac{2}{5}$ 99 99 ...	Feels chilly.
May 5	1 A. M. 4 A. M. 8 A. M. 8 P. M.	107, very feeble 107, extremely weak 106, a little stronger 108, regular	24 24 24 ...	101 $\frac{4}{5}$ 101 $\frac{4}{5}$ 103 $\frac{2}{5}$	Increased febrile action; or- dered digitalis, and in- creased amount of quinia.
May 6	5 A. M. 10 A. M. 12.50 2.15 P. M. 3 P. M. 4.15 P. M. 5.30 P. M. 6.45 P. M. 8.30 P. M. 9.30 P. M. 10.30 P. M. 12 midnight	100, regular 102 129 120 150, intermittent 124 128 119 120 130 120 120	18 24 16 18 15 18	100 101 101 $\frac{2}{5}$ 104 103 $\frac{4}{5}$ 104 $\frac{4}{5}$ 104 103 $\frac{3}{5}$ 105 105 106	At 12.50 transfused f $\frac{2}{3}$ vss bl'd. Vomiting and purging at 1.30 P. M.; lividity. Complains of pain in head. Very restless from 2 until 6, tossing arms about, etc.; after that unconscious.
May 7	1 A. M. 2 A. M. 3 A. M.	124 140	13 11 ...	... ... ...	Expired.

A suppository of morphia gr. one-eighth was ordered just before the operation; but by accident suppositories containing gr. one-fourth had
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been substituted for them, and one was administered at 12.20, 1.45, and 3 o'clock. No further evacuations occurred. At 3 A. M., May 7th, he quietly expired.

In morning of this day, May 6th, some hours *before* transfusion was performed, the minute petechiæ described in post-mortem account made their appearance; but the nurse did not call attention to them.

It is doubtful if the morphia had any influence upon the results of this second transfusion. The amount taken was not large (only 1 grain in all), and the symptoms, excepting the relative slowness of breathing, were such as are frequently observed before death after transfusion.

Post-mortem Examination.—The body did not present the slightest evidences externally of decomposition, nor was there any odour to indicate it. The surface was intensely pale. Over the shoulders and the front of the chest and trunk, there were numerous minute petechiæ; a few very small ones were also seen on humeral regions and thighs. There was no œdema of any part of the body; over the legs, and to a less extent on the arms there were still to be found traces of an old eruption, in oval or reddish patches of various sizes where the skin is dry, irregularly thickened and covered with shining scales (psoriasis). There was a fair amount of fat in the subcutaneous tissues as well as on the omentum, the pericardium, and diaphragm.

Thorax.—The costal cartilages were very firmly ossified. The cartilage cells exhibited no disposition to proliferation, but many of them contained more than the usual amount of oil in small and large drops. There were about four fluidounces of reddish serum, like claret and water, in the left pleural sac, and about two ounces on the right side. There were a few slight adhesions over apices of lungs. The anterior parts of the lungs were anæmic and pale, while the posterior portions were dark, congested, and œdematous. No ecchymoses or spots of infarction were found.

The pericardium was apparently healthy, and not stained by imbibition; it contained one fluidounce of bloody serum, which showed under microscope a few epithelial cells from the serous membrane, and a very few red globules, very faintly visible. On cutting the vessels of the heart, soft, dark clots escaped from the aorta, pulmonary artery, right auricle, and vena cava. The lining membrane of heart and great vessels was deeply stained. The right ventricle contained a moderate amount of dark, partly fluid blood, which was beginning to decompose and contained minute bubbles of gas; the left ventricle was almost entirely empty. The heart was so flabby that it did not retain its shape in the slightest degree when placed on a flat surface. The muscular structure was very soft, friable, and pale. The walls of the right ventricle were thinned, and especially soft and pale. There was no valvular lesion. The aorta showed a few small patches of atheroma. Fragments from wall of right ventricle showed under microscope, not much free interstitial oil, but almost entire loss of striation; only in a very few fibres could a trace be detected, while the vast majority were in a state of advanced granular and fatty change. The fibres were very friable, and were broken in very small fragments in teasing them out.

Fragments from wall of left ventricle, from small trabeculæ, and from septum ventriculorum, all showed same extreme degree of degeneration.

Blood.—*Clot from right auricle:* fibrin well clotted, but, at first sight, apparent absence of red corpuscles; almost normal number of white corpuscles were seen, revealing normal nuclei on treatment with acetic acid.

On very careful focussing with quite high power (one-tenth) it was seen that the red globules were indistinctly visible, appearing as faint shadows, as though almost entirely dissolved in the serum. Not a single red corpuscle could be found which was distinct.

From Portal Vein: about f3ij drawn directly into clean silver spoon and placed directly in small bottle. Eleven hours later no clot had formed. On looking at drop under glass, a moderate number of white corpuscles and a few filaments of fibrin were visible, but at first no red globules. A misty appearance was observed all over field, which was cleared away by acetic acid, and by careful focussing with a one-tenth Tölles' could be resolved into very faint, almost indistinguishable red globules.

The *liver* was of normal size; its surface was quite pale, except where stained from contact with the colon, and also presented irregular patches of very light yellowish colour. Its veins contained a fair amount of dark fluid blood. The liver substance was fatty to a considerable degree. There was a good deal of free oil in small and large globules. A good many cells were stuffed with oil globules, but in many others the contents were merely strongly granular and the nucleus could be seen. No appearance of disintegration of cells. Some small dark masses, like aggregations of pigment granules, were seen.

The *gall-bladder* was much contracted, not having capacity of more than f3ij or f3iij; its walls thickened and fibrous. The mucous membrane presented a few small ecchymoses, but was smooth and not ulcerated. It contained a rounded blackish calculus, over one-half inch in diameter, and about two fluidrachms of thick puriform fluid, which presented none of the microscopic elements of bile, but abundant cylindrical epithelium, and very numerous pus corpuscles (granular nucleated leucocytes) closely resembling the medium-sized cells found in the marrow. The *bile-ducts* throughout the liver contained pale, but apparently healthy bile. There was no obstruction of the cystic or common duct.

The *stomach* was of ordinary size, the mucous membrane pale, and showing a few small ecchymoses, but otherwise healthy.

The *spleen* was slightly enlarged; the corpuscles healthy; on handling it, distinct crepitation was perceived, owing to decomposition of its tissues, despite the general good preservation of the corpse. The splenic pulp was softened and purplish, without any leukæmic patches or enlarged Malpighian corpuscles. Under the microscope the field was crowded with small round cells (smaller than the majority of the cells in the marrow), spindle-shaped cells, and very pale red blood globules.

The *supra-renal* capsules presented no special change; the central cavities seemed somewhat too large.

Kidneys.—Capsules healthy; tissue intensely pale and softened; cortex not diminished; tissue opaque and cloudy; epithelium very fatty and granular; many tubules choked with fatty epithelial cells or granulo-fatty detritus; no increase of interstitial tissue.

Urine.—No blood globules; numerous large crystals of uric acid, and quite numerous hyaline casts with a few epithelial elements contained; in some cases, also, granular collections in the casts. In one instance a tube cast composed entirely of fatty epithelial cells was seen. Urine highly albuminous. It was the first urine passed after the second transfusion.

The *pancreas* was of normal size, extremely pale, but apparently healthy. Its tissue showed under the microscope quite abundant free oil, with a granular condition of the cells, but without any excess of connective tissue.

Small Intestines.—The walls were thin, pale, and softened; the mucous membrane was pale and especially thin. There was no enlargement of Peyer's patches, but the solitary glands throughout the small intestine, and especially in the ileum, were enlarged and prominent, showing chronic follicular irritation. There was no disease of the large intestine. The mesenteric glands were not materially enlarged.

The *general muscular system* was fairly developed, and was of natural colour and consistence. Microscopic examination of fibres from muscles of forearm showed a healthy condition.

There was a most singular absence of *blood* in all parts of the body (excepting posterior parts of lungs, right side of heart, and veins of liver), so that the remainder of examination was almost unattended with any escape of blood, even after the abdominal vessels were freely opened.

The *brain* was large, with some excess of subarachnoid effusion. The gray substance was very pale: the medulla entirely anæmic. The Pacchionian bodies were large.

Marrow from canal of radius appeared decidedly paler than in health; examined in fresh condition it was found to be made up almost entirely of granular cells, round or nearly so, but varying in size from a diameter of $\frac{1}{3500}$ to that of $\frac{1}{2000}$ of an inch. Many of the larger of these cells exhibited a single distinct spherical nucleus without the aid of reagents. The smaller cells often failed to exhibit such nucleus before addition of acetic acid, after which, however, as a rule, it was distinctly displayed. A few of these cells also were granular to a marked degree, and a smaller number contained a single drop of fat. There was also a very moderate amount of free oil in large drops.

Marrow from sternum quite red; very little oil; made up of crowded cells, roundish and granular; on treatment with acetic acid, showing in most cases a single round faintly granular nucleus; the cells varying in size from less than a white blood cell to twice that size, the smaller ones preponderating.

It is evident, on reading these cases, two of which were observed without any knowledge of the reports of similar cases, and on comparing them with these reports, that we have to do with a very definite and well-marked condition of disease—not at all new, because it was clearly recognized by Addison under the name of “idiopathic anæmia,” and because it is certain that isolated cases have been observed by different authors; but more distinctly and minutely described of late in consequence of our greater knowledge of diagnosis, and particularly of the distinctive features of the various cachexias.

Like all analogous diseases, this peculiar form of anæmia is not limited to either *sex* or to any *age*. The recent German observers found it more frequent in women, but two of the cases which I have observed were in men. Addison speaks of it as occurring generally, but not exclusively, beyond the middle period of life. Biermer's cases ranged between 18 and 52 years of age; Immerman's were 18 and 31 years old respectively; Gusserow's five patients were from 24 to 36 years old; and in my own cases, the age was respectively 26, 50, and 57 years. If age has any influence upon the production of this affection, which seems to me doubtful,

it may be that, excepting in cases developed in connection with pregnancy, it is more apt to occur about the middle period of life.

As so many cases were observed in the course of a few years at Basle and Zurich, Immerman (*loc. cit.*) suggested that there might be some local cause to explain this rare form of anæmia; but this idea is clearly disproved by the occurrence of similar cases at Dresden, Bologna, in this country, and elsewhere.

Pregnancy would certainly seem to act as a predisposing cause. Gusserow described his cases under the title of "very intense anæmia of pregnant women." Although it is met with in men and non-parturient women, a large proportion of cases so far observed have been in connection with pregnancy, and especially when there have been frequently repeated previous pregnancies. Thus in Corrazza's case there had been four pregnancies in five years; Biermer noted that child-bearing appeared to have acted as a predisposing cause; in one of Gusserow's cases there had been six children born in nine years; in another case, seven children in twelve years; in another, the patient, twenty-nine years old, was in her sixth pregnancy; in another, the patient, twenty-nine years old, was in her tenth pregnancy, having given birth to nine healthy children in nine years. In but one of his cases was the patient a primipara, and in that instance there were extreme over-fatigue, anxiety, and privation in addition. Long ago Cazeaux¹ contended for the existence of a marked tendency to anæmia during pregnancy; and when we consider the profound nutritive changes which attend that state, and the heavy demand which is made upon the maternal system, it is not difficult to understand that when repeated with excessive frequency and rapidity, or if accompanied by depressing influences, a grave and even fatal disturbance of the blood-making function might result. It is, in this way, that it is not uncommon to observe not only the form of anæmia we are considering, but all of the cachexiæ originating in connection with pregnancy.

Another influence which I am disposed to recognize as an occasional predisposing cause is that of a *long-continued local irritation*, especially if associated with mucous or purulent discharge. It will be remembered that Trousseau (*Clinical Medicine*, Syd. Soc. Ed., vol. v. p. 206) endeavours to connect the closely-analogous condition of *adenia* or *lymphatic anæmia* with some previous local irritation. In a considerable number of the cases of so-called progressive pernicious anæmia, chronic diarrhœa, dependent on follicular irritation of the intestines, is reported to have existed before the development of the disease. In the first case here reported, an obstinate bronchial catarrh of five months' duration preceded the appearance of the characteristic symptoms. In the third case, chronic suppuration of the gall-bladder, with chronic follicular catarrh of the intestines, had ex-

¹ Revue Médicale, 1851, p. 553, *et al.*

isted for many years. It is evident that this latter cause might operate by interfering with the proper absorption of alimentary matters, and thus gradually undermining nutrition until some grave lesion of a part of the blood-making apparatus was superinduced. There are, however, other cases where no such cause can be assigned, and where the only influence that can be suggested as a possible cause is either overstrain of mind and body, or unfavourable hygienic conditions.

It seems, too, that in some instances chronic syphilis, and possibly chronic malaria also, may so profoundly affect the blood-making tissues as to develop fatal progressive anæmia.

And finally, cases have been met with where no cause whatever could be assigned, and the disease would appear to have originated idiopathically.

The *course* of the disease has been unusually similar in the majority of recorded cases, and in most respects the graphic description of Addison (p. 316) might still serve. Sometimes there is an indefinite period of slight failing in health before any change in appearance is observed; in other cases the patient complains of a gradual and increasing pallor, with loss of strength. More rarely the patient can refer to some particular week or day as marking a more abrupt beginning of his sickness.

The *appearance* of the patient soon becomes characteristic of extreme anæmia. In a small proportion of cases, jaundice of quite marked intensity may occur (Corrazza's Case, and Case II., here reported), and then subsequently the skin may retain a faint straw-coloured tint. But generally the surface is deathly pale, with or without a faint tinge of sallowness, the conjunctivæ pearly white, and, towards the latter stage of the disease, the bloodless pallor of the skin and mucous membranes is greater than I have ever seen it in other conditions, and the appearance of the patient becomes frightfully corpse-like. No abnormal pigmentation occurs.

Dropsy is a very frequent symptom, both as œdema and in the form of internal serous effusions. The œdema may be slight and transient, as in Case II. and III., or it may be persistent; in the latter form it usually comes on late in the case. In Case I., after having been limited to the face and ankles, it rapidly increased and spread over the whole body shortly before death. In Case II. it was limited to puffiness under the eyes, such as is so often seen in latent renal disease. It is evidently due to the watery condition of the blood, aided by the feeble state of the circulation. Internal effusions are frequent, but occur late, and are rarely of sufficient extent to attract notice by any special symptoms during life.

Emaciation does not occur to any marked extent. Addison laid especial stress upon the maintenance of the bulk of the frame, despite the utter exhaustion; and although in many cases a moderate amount of loss of flesh occurs, it is not to be compared with the emaciation which attends many exhausting diseases.

The *nervous symptoms* which are present are to be attributed chiefly to

the deficiency of blood and the weakness of the circulation. At first there is merely a sense of languor and indisposition to exertion; later the patient complains of giddiness and faintness, even upon sitting up; the mind grows dull, or can be fixed upon any subject but for a short time; somnolence increases with or without occasional wandering delirium, and as death approaches there may be deepening coma, or delirium may still persist. The patient also complains of the most intense feeling of muscular weakness, and this is frequently the only symptom that will be referred to by him. In my own last case this sense of prostration was so profound that the patient continually believed that he was about to die; and so terrible was it on awakening from sound sleep, that he insisted upon being disturbed every half hour. This is clearly suggestive of the anæmic state of the nerve-centres. Biermer noticed in some of his cases that transient paralysis occurred, which he attributed, with apparent reason, to small hemorrhages into the brain-substance.

The *circulatory* disturbances, intimately connected as they are with the state of the blood, are very interesting. The pulse is accelerated, and is very readily affected by trifling effort or excitement. Early in the disease it may retain a fair volume, but later grows small; it is always weak, compressible, or even gaseous. In addition it may, as in Case III., be intermittent. The patient is subject, from an early period of the case, to spells of palpitation, which may occur without apparent cause, but are usually the result of slight excitement or of some exertion, such as going up stairs, or even rising in bed. A marked tendency to attacks of syncope is a nearly constant symptom, and so dangerous may these be, as in Case III., that it is evident that any considerable effort should be avoided lest sudden death may occur.

The heart's action is feeble, the impulse very weak, and the sounds, especially the first, are poorly developed. When to these characters are joined the acceleration of action, the tendency to palpitation, the occasional irregularity or intermission, and the character of the pulse, it will be seen that the physical signs of marked fatty degeneration are distinctly present. Added to these are unusually strong hæmic blowing murmurs. In some cases these are limited to the region of the heart, aorta, and pulmonary artery, where they may be soft, or so loud and strong as to raise suspicion of the presence of organic disease. In other cases, as in Case I., there is associated with the hæmic cardiac murmurs, a well-marked anæmic hum (*bruit du diable*) in the large veins, especially the jugulars. I would allude particularly to the subjective roaring heard by the patient herself in that case, and to the fact that a distinct continuous humming murmur, uninfluenced by respiration, was audible on auscultation over the whole skull, and especially over the course of the lateral and longitudinal sinuses. In one of Gusserow's cases venous pulsation in the neck was observed.

The tendency to *hemorrhage* varies much in different cases. Thus in Case II. no hemorrhage occurred during life, and at the autopsy ecchymoses were found only on the visceral layer of pericardium. In Case III., the only hemorrhage noticed during life were numerous small petechiæ on the last day, and subsequently ecchymoses were found only under the mucous membrane of the stomach. In Case I., on the other hand, there was repeated hemorrhage from the gums, and menstruation was excessive. In many of the cases recorded abroad, petechiæ occurred—under the skin or in the retina—and occasionally hemorrhage took place from the nose or kidneys, or into the brain. No ophthalmoscopic examination was made in any of the cases here reported. It is possible that the coma which appeared before death in Case I. may have been due to cerebral hemorrhage. On the whole, hemorrhage in some form is a frequent and characteristic, though by no means constant, symptom; it occurs in many different forms, usually towards the close of the case, and in connection with internal organs is very frequently found among the post-mortem lesions.

In no case which presents the above symptoms, should we omit to make a most careful examination of the *state of the blood*. It is evident from a glance at the patient that the mass of the blood is diminished to an extraordinary degree, and this is confirmed by post-mortem examination. (See pages 324 and 332). A drop of blood drawn by pricking the finger seems thin and of a light dirty-red colour. Microscopic examination shows that the white corpuscles have undergone no increase whatever, though owing to the great diminution in the red globules, their relative proportion may seem somewhat increased. No peculiar change in the white corpuscles has yet been observed. The most striking change, however, is in the red globules. I do not know of any careful analysis to show how far their proportion is reduced, but it seemed to me I had never looked at a microscopic field of blood where the diminution in red globules even approached what was observed in Case III. No rouleaux were found, and the globules seemed paler and less biconcave than normal.

The *respiration* is naturally much disturbed, although no pulmonary lesion is present. With the attacks of palpitation above described, there is paroxysmal dyspnœa, and after the disease is fully established the breathing is very readily disturbed by slight exertion. Still later, when the anæmia is far advanced, I have noticed a peculiar persistent sense of insufficient aeration, which was so intense in Case III. that the patient insisted upon all the doors and windows of his bed-chamber being open, though the draft which was caused was so cold and strong that his nurses had to wrap themselves in fur robes during the night-watches. There is usually no cough, though in the latter stage of the affection, owing to the development of œdema and congestion of the lower lobes of the lungs, the breathing is apt to be quickened, and dry cough may appear. Physical examination in no case revealed any abnormal sign, excepting ex-

aggregated pulmonary resonance, owing to excessive anæmia of the lung tissue; until towards the close of the case, when congestion of the lower lobes appeared, with feeble vesicular murmur and subcrepitant râle.

The *digestive* system affords symptoms which are quite constant though not characteristic. I have already alluded to the fact that in a considerable proportion of cases the patient has previously suffered from chronic diarrhœa; but whether this has been so or not, there is apt to be occasional diarrhœa during the course of the disease, and especially towards its close. In some cases, on the other hand, the bowels are quiet throughout. I am not aware that hemorrhage from the bowels has yet been observed, though it may be expected to occur in some cases. The tongue is extremely pale; it may remain clear and moist, or, again, may present, as in Case III., a heavy whitish or yellowish fur. The appetite fails, and there may be entire anorexia; in some cases there is actual loathing for certain kinds of food, as greasy substances. There is usually a feeling of weight or pressure at the epigastrium, which is increased by food. Nausea is easily excited; in my own cases slight exertion was sufficient to produce it, and even to cause retching and vomiting. The abdomen is entirely indolent, is apt to be rather large and distended from the presence of flatus, and towards the close of the case often presents a moderate amount of peritoneal effusion (ascites).

The *liver* does not appear to be specially affected. In Case III. there had been attacks of hepatic colic for years previously, but the symptoms of the intense anæmia which developed itself later were not modified by hepatic disturbance. The jaundice which occasionally occurs, as in Case II., is transient and does not seem to depend upon any organic change in the liver, but to be due either to catarrhal inflammation of the ducts, or, as appears more probable to me, to the acute alteration of the blood. It will be noticed that both in Corrazza's case and my own the jaundice occurred early in the case, and upon its subsidence the evidences of intense anæmia were manifest. Throughout the disease (even in Case II., where the jaundice was most marked) the stools were well coloured.

The *spleen* is almost always enlarged, though but so moderately that it is frequently impossible to demonstrate the fact by percussion or palpation during life. The characters of the organ will be described further on, when speaking of the morbid anatomy of the disease.

The *lymphatic glands* are not at all enlarged.

The *urine* is, as a rule, normal in quantity and quality. In a few cases a small amount of albumen has been detected, though without the presence of tube-casts. In none of the three cases I have reported was albuminuria present, with the exception of the urine passed in Case III., soon after the second transfusion, which contained a large amount of albumen with hyaline and granular epithelial tube-casts. Although there was marked fatty degeneration of the kidneys, however, it is evident that this

was to be attributed to the effects of the transfusion, as the urine had been repeatedly examined previously without detecting any albumen. In a few of the cases reported abroad, hemorrhage from the kidneys is stated to have occurred.

There is no reason to suspect the *pancreas* of being implicated. In two of my cases careful examination of the stools failed to show any excess of free oil.

It remains only to notice the fact that throughout the course of this affection there is a tendency to *febrile action of irregular type*. In some cases this occurs in rather a paroxysmal way, the temperature being almost normal for a time, and then quite decided febrile exacerbation manifesting itself, and again subsiding after a few days. In other cases there is more continuous though still very irregular febrile movement. The elevation of temperature usually shows itself towards evening, as in hectic fever; and at times, as in Case I., the periodicity is so well marked as to arouse suspicions of the malarial nature of the case. The usual range of temperature is from the normal point to 101° or 102° ; but it is recorded in some cases as high as 103° and 104° . In the table appended to Case III., it will be seen that the temperature, which, before the first transfusion, was slightly elevated, 101° , immediately afterwards rose to $104\frac{1}{4}^{\circ}$, then rapidly fell again, and remained about normal for a few days, when a fresh rise began, the temperature reaching $103\frac{2}{5}^{\circ}$, and falling again during the night. Even before the second transfusion it was again rising, but under the effects of that operation it rose with frightful rapidity in twelve hours to 106° , when death occurred. Although this tendency to irregular febrile action is an important symptom, it cannot be spoken of as constant, and in some cases it is probable that the disease may run its entire course without any positive elevation of temperature.

Having thus alluded to the most important symptoms, a brief allusion must be made to the *morbid anatomy*.

The most remarkable changes are those connected with the *blood*. In the first place, the entire mass of the circulatory fluid is reduced to a greater degree than I have ever before witnessed, so that not only are all the tissues remarkably bloodless, but even the veins appear almost empty. In both of the examinations I have made, it is no exaggeration to state that after the escape of a small amount of blood from the portal vein, the remaining abdominal veins were literally empty. The characters of the blood have greatly changed. There are soft, dark coagula in the cavities of the heart, but elsewhere the blood shows little tendency to coagulate. Its colour is a dingy, dirty red (like thin coffee—Gusserow); it is very thin and watery, and is prone to undergo decomposition. I have already alluded to the microscopic appearances, and will merely add that in Case III., although it is probable that these appearances were in part due to the fatal effects of the second transfusion, the blood presented a truly

remarkable condition of the red globules, which were so pale and indistinct, as if from solution in the serum, that it was only by delicate focussing and the use of high powers ($\frac{1}{10}$ objective, Tolles) that they could even be detected as faint, shadowy outlines.

Nervous System.—The only constant appearance here is that of extreme anæmia of the membranes and substance of the brain. There may also be the traces of minute hemorrhages into the cerebral tissue. Frequently there is a rather unusual amount of clear serous effusion at the base. I am not aware that any microscopic examination has been made, excepting that by Mr. Quekett of the sympathetic ganglia, which are reported by Addison to have been fatty.

Circulatory System.—Next to the changes in the blood, the most constant lesion hitherto found is fatty degeneration of the muscular tissue of the heart. This may involve the entire substance of the heart, leading to loss of striation of the muscular fibres, and accumulation of fatty granules and minute oil-drops within the myolemma; or, as in many of Biermer's cases, it may be only partial and localized, affecting especially the papillary muscles. In both cases where I have had the opportunity of examining the heart, the fatty degeneration was general and far advanced. There can be no doubt in referring this lesion to the effect of the primary blood change. The valves of the heart are healthy. There are perhaps a few small spots of atheroma of the aorta, but there is no organic change to explain the fatty degeneration of the heart, which must be a part of the general malnutrition, as most clearly pointed out by Ponfick, in his memoir on the "Anæmic form of Fatty Degeneration of the Heart," already referred to. This is further confirmed by the experiments of Perl, which show that anæmia, caused by repeated large losses of blood, induces fatty degeneration of the heart.

The whole organ is flabby and relaxed, so that it does not retain its shape when thrown on a flat surface. Its size is not specially affected. The cavities, especially the auricles, contain soft dark clots. The lining membrane is in some cases stained by imbibition. Occasionally small ecchymoses are observed under the pericardium, and usually there is a small amount of serous effusion in the pericardial sac. In Case III. this effusion was of the colour of claret and water, and contained a few red globules, though its colour was chiefly derived from the dissolved hæmoglobulin.

In some cases, fatty degeneration of the small vessels in various organs has been found.

The *lungs* are extremely anæmic, pale, and crepitant, excepting at the postero-inferior portions, where there is nearly always marked œdematous congestion. There may be small ecchymoses on the pleural surface, and usually there is a moderate amount of serous effusion (f3iv to f3x), yellowish or more frequently reddish in colour.

The *mucous membrane of the stomach* may present small ecchymotic

patches, but is otherwise normal. Ponfick has observed fatty degeneration of the epithelium of the secreting glands. The intestines more frequently present lesions, especially in those cases in which there has previously been diarrhœa, when there is found marked enlargement of the solitary follicles of the small intestines, with or without thinning and softening of the mucous membrane. Even in such cases, the mesenteric glands appear to be but slightly, if at all, enlarged. In cases where no diarrhœa has been present, the intestines are healthy, excepting extreme anæmia of their walls.

The *liver* is not enlarged; its tissue is highly anæmic, and usually presents fatty degeneration. This may either affect the glandular cells uniformly throughout the organ, when the entire surface of a section is not only anæmic and pale, but decidedly yellowish; or, as in Cases II. and III., it may appear chiefly in irregular patches; or finally, as described by Gusserow, it may be observed as minute pale yellowish specks in the tissue. As would naturally be expected, where a lesion is of a purely secondary character and is determined by the general anæmia, its degree varies greatly in different cases.

The *spleen* is almost always slightly enlarged. In the descriptions of this disease will be found the statement repeatedly that enlargement of the spleen is not present. In reality, however, although there is no characteristic lesion, such as leukæmic changes or enlargement of the Malpighian corpuscles, there is in nearly every instance a slight but positive degree of enlargement of the spleen, which in different cases varies from $\frac{1}{4}$ to $\frac{1}{2}$ the original size. In addition to this the pulp has evidently undergone greater change than the other solid organs: it is softened and changed in colour, being purplish or dark brownish-red. It somewhat resembles the swelling of the spleen which follows section of the splenic nerves. And certainly, in an affection such as the one we are discussing, the smallest changes in any of the tissues undoubtedly connected with the elaboration of the blood are highly important.

The *kidneys* frequently present fatty degeneration of their epithelium. This was detected in marked degree in both my own examinations, associated in Case III. with obstruction of many tubules with fatty epithelial cells or granular matter. The capsules of the glands are healthy; the tissue intensely anæmic; there is no increase in connective tissue found; and everything points here, as elsewhere, to the entire dependence of the fatty degeneration upon the primary alteration of the blood.

The *supra-renal capsules* present no special lesion. There is no affection whatever of the *lymphatic glands*.

The peritoneal cavity frequently contains a small quantity of effusion, which may be so great as to attract attention during life.

I am not aware that the *marrow of the bones* has been carefully examined in any case of this peculiar form of anæmia, until the very thorough

study which was made by Prof. Tyson and myself of the specimens from Case III. In one case, graphically described by Ponfick,¹ which seems to have been of this nature, the general character of the marrow is described as "pale, clear grayish-red, quite soft, and of uniform appearance;" but no allusion is made to any more minute examination. I will not waste space by repeating the results given in connection with the case (p. 332), but will merely recall the fact that there existed extreme hyperplasia of the marrow, with production of lymphoid cells, constituting a change similar to that described by Neumann, Ponfick, Mosler, and others, as found in some cases of leukæmia. It is needless to say that it would be premature to advance any theory upon the conditions found in a single case, but if it be shown that in "idiopathic" or "progressive pernicious anæmia" the lesion of the medulla be a constant one, it will establish the truth of the view I now hold, that it is merely the simple medullary form of pseudo-leukæmia.

Diagnosis. Relations to Pseudo-leukæmia.—The recent authors who have described this form of anæmia, assert that it is to be distinguished from pseudo-leukæmia by the absence of enlargement of the glands or of the spleen; but it seems to me more rational first to briefly consider the points of resemblance between the two affections, and then to note the diagnostic symptoms, if any, that may exist. It is not necessary to do more than allude to the following features which both possess in common:—

The insidious and apparently causeless development of languor, debility, and pallor of the surface.

The tendency to palpitation of the heart, to attacks of dyspnœa, to giddiness, tinnitus, and later to dangerous and even fatal syncope.

The failure of appetite, sense of pressure at the epigastrium, and liability to nausea or vomiting on exertion or from indigestion.

The tendency to œdema and passive internal effusions.

The existence of strong anæmic murmurs over the heart and great vessels.

The occurrence of hemorrhages, as petechiæ under the skin or in the retinæ; or from the nose, gums, etc.

The occasional occurrence of albuminuria.

The progressive reduction of the mass of the blood, and especially of the proportion of red globules.

The occurrence of irregular febrile action in many cases.

The absence of emaciation in any marked degree.

The steady progress of debility; the occurrence of wandering delirium, or increasing coma, and finally death, despite all modes of treatment.

The frequent existence of fatty degeneration of the heart, kidneys, and liver, without other organic disease.

If to these important symptoms there be superadded progressive enlarge-

¹ Ueber Fettherz, p. 10.

ment either of the lymphatic glands or of the spleen, or of both, I think it will be admitted that we have presented the full clinical picture of pseudo-leukæmia. In such cases there may be some additional symptoms depending upon the special organ affected. Thus in cases marked by great enlargement of the glands, we may have pressure upon the trachea, causing dyspnoea and aphonia; upon the intra-thoracic vessels, causing large hydrothorax; upon the nerves of the lumbar or sacral plexus, causing paroxysmal radiating pains; or upon the great vessels of the abdomen, leading to unusually great œdema of the limbs or ascites. So, too, in cases where the spleen is especially implicated, special symptoms, such as ascites, hemorrhage from the stomach or bowels, may be prominent. But it would seem clear that such accidental symptoms cannot affect the fundamental and essential similarity between what I believe to be merely different forms of pseudo-leukæmia, as shown above.

If this be true then, and we have an affection characterized by a profound alteration in *hæmatosis* or the blood-producing function, depending upon lesions in the spleen, lymphatic glands, or marrow of the bones, and leading to the changes in the blood and the peculiar general symptoms we have dwelt upon, it is but right that it should be recognized as a special disease, and receive a name descriptive of its real character. The name of pseudo-leukæmia must certainly be abandoned as unmeaning and confusing. The word cachexia is not sufficiently definite, even when joined with the term "splenic," "lymphatic," or "medullary," according to the tissue chiefly affected. I would, therefore, suggest that, as the essential feature of this whole class of affections is the *defective elaboration of blood*, the term Anæmatosis (*a*, privative, and *αἷματος*, formation of blood) be adopted as a generic name, as distinguished from anæmia, where, without lesions of the blood-making tissues, the mass of the blood or its solid ingredients are diminished.

Relations to Leukæmia or Leucocythæmia.—It is impossible at present to enter upon a discussion of the clinical symptoms presented by leukæmia, and I must limit myself to the assertion, which can be supported, that the only symptom by which cases of the so-called pseudo-leukæmia can be distinguished from the corresponding forms of leukæmia is the increased proportion of white corpuscles found in the blood in the latter affection. In every other respect, as already recognized by Wood, Immermann, and others, their symptoms are indistinguishable. It is clear, also, that in leukæmia the characteristic symptoms and the fatal results are not dependent upon the excess of white corpuscles, but rather upon the profound impairment of the vital properties of the blood and the diminution in the red globules which coexist. Indeed, while these latter changes are constant and progressive, the increase in the white corpuscles appears at irregular and variable periods in the development of the disease, and varies immensely in its degree in different cases. At present it is impossible to decide upon the

exact lesion which determines this increase. We now know that hyperplasia of the marrow, of the spleen, or of the lymphatic glands, even with the development of lymphoid tissue in the liver, may occur and induce profound anæmatisis, but without any leukæmia. It would seem, then, that the changes in the splenic pulp and in the marrow are probably connected with the increased destruction of the red globules. But our knowledge of physiology is not yet sufficiently accurate to enable us to determine why, in certain cases, there is also an increase in the number of white corpuscles: whether there is, in such instances, an increased formation of them connected with hyperplasia of the Malpighian bodies of the spleen, or whether there is some peculiarity in the properties of the white corpuscles in those cases which prevents their conversion into red globules, and thus causes them to accumulate. It is not desirable to speculate about this point, which will probably be soon settled; but the very important conclusion is that a condition so inconstant and irregular, as the increase in the proportion of white corpuscles, should not be made a ground of distinction between groups of cases identical in all other respects. It would certainly be more reasonable to regard all such cases as forming one great class, and to accept such conditions as increase in the white corpuscles as indicating some peculiarity in certain individual cases of the class. Thus, instead of adopting leukæmia as the type, and speaking of pseudo-leukæmia, I would propose to group all of these cases, distinguished by progressive deterioration of the blood connected with lesion of some part of the blood-making apparatus, under the name above suggested of *anæmatisis*, and, if it be deemed necessary, to distinguish those cases which present increase of white corpuscles in addition to the other symptoms by the prefix "*leucocytic*."

Albuminuria.—There is no doubt that some cases of albuminuria bear a close resemblance to the form of anæmatisis we have been considering. But when the small and inconstant amount of albumen in the latter affection is remembered, as well as the absence of tube-casts, the presence of anæmic murmurs without any hypertrophy of the heart, and the more intense degree of the blood alteration, it will not be difficult to avoid the error of confounding them.

Addison's Disease.—This rare form of anæmia, with bronzing of the skin, which Addison first pointed out as connected with a peculiar form of disease (chronic scrofulous inflammation) of the supra-renal capsules, can scarcely be distinguished from the other forms of anæmatisis until distinct bronzing of the surface makes its appearance. In fact it is difficult to avoid the conviction that there is more than a mere superficial resemblance between the two affections, and that an analogous disturbance of hæmatisis (possibly connected with lesion of the marrow of the bones) is the essential feature in Addison's disease.

Prognosis.—Unfortunately there is but little to be said upon this point, since in every case where the specific characters of the disease have been

well established, the symptoms have steadily progressed to a fatal result. In the cases of the purely medullary form—where neither spleen nor lymphatic glands are enlarged—it is manifestly difficult to fix the moment when the case is recognized as differing from ordinary severe anæmia. When, however, such an anæmia has appeared causelessly, and progresses despite the use of full doses of iron, suitable food, and favourable hygienic influences, with the peculiar group of general symptoms, and especially with those indicative of fatty degeneration of the heart, there is grave reason for fearing that we have to do with an organic anæmatosis, and that death will result.

Treatment.—From what has been already said, it will be understood that treatment offers little ground for hope in this affection.

In the early stages, rest and change of residence should be recommended. Bearing in mind that not rarely fatty degeneration of the liver and glands of the stomach is present, and that consequently digestion is much impaired, the nutrition should be most carefully attended to, and food administered in the most digestible forms.

Owing to the failure of the appetite and the muscular debility, there would seem to be an indication for the use of tonics, such as vegetable bitters or the mineral acids. But there is no evidence to show that they are productive even of temporary—certainly not of permanent benefit. The same must be said of quinia, which is apt to fail to arrest the irregular febrile movement or to modify the progress of the case, even if the condition of the stomach will permit its continued use in full doses. Notwithstanding this, however, I should certainly recommend the persistent use of quinia for its general tonic action, associated with digitalis, on account of the feebleness of the heart.

Iron would naturally suggest itself as the most appropriate remedy in view of the intense and progressive anæmia. It is found, however, that in some cases it is not well borne, and that, even when given in large doses, it exercises no curative effect. The entire failure of the preparations of iron must be regarded as one of the marked features of difference between this form of anæmia and chlorosis. It is not difficult to explain their want of action, however, when we reflect that the cause of anæmia here is an organic lesion of some of the tissues concerned in the elaboration or in the disintegration of the corpuscular elements of the blood.

In view of the changes which seem to lie at the bottom of these obscure diseases, it would appear that the same powerful alterative medicines which we employ in other cachectic conditions should be relied upon here, and that cod-liver oil, iodine, and arsenic, or some of their preparations, should form a part of our treatment. In the paper of Mr. Broadbent (*Practitioner*, January, 1875), already referred to, the use of *phosphorus* is recommended, on account of its well-known power of influencing profoundly the processes of hæmatosis and nutrition.

Transfusion.—There is, however, one important remedial measure which would undoubtedly suggest itself to every mind. In view of the great reduction in the mass of the blood, and especially in the proportion of red globules, the performance of transfusion would seem strongly indicated. And accordingly in several of the reported cases we find that this operation was either suggested or actually performed. Attractive and promising, however, as it seems at first sight, there does not appear to be any substantial reason for expecting more than temporary benefit from transfusion in such a condition. If the diminished amount of blood constituted the essence of the disease, recovery might be effected by adding fresh and healthy blood. But, since this is but one symptom of a profound lesion of the blood-making apparatus, I can see no good reason for hoping that the morbid process can be arrested, or its effects counteracted merely by adding a small amount of healthy blood to the mass of altered and partly devitalized fluid in the patients' veins. It must further be remembered that the conditions here present must render it necessary to inject a very small quantity of blood at any one time. The heart is uniformly found in a state of fatty degeneration, there is extreme tendency to syncope, and the amount of circulating fluid is very small. It will be easily understood, therefore, that transfusion, to be safely practised in such conditions, must be very cautiously and slowly performed, and the amount of blood injected must be comparatively small. If these precautions be neglected, reasoning would lead us to expect, and experience has unfortunately confirmed the apprehension, that there may be dangerous or even fatal shock after the operation. In Case III. transfusion was twice performed. After the first operation, when only f̄ivss defibrinated blood were slowly injected, very alarming symptoms presented themselves in a few hours, and so violent was the depression as to threaten a fatal result. Following these dangerous symptoms, however, there was a short period of apparent improvement resulting from the effects of the transfusion. It was but short-lived, however, and it will be observed that for forty-eight hours preceding the second transfusion, the patient's condition was not so favourable; debility increased, and for the first time petechiæ made their appearance.

The second operation was performed even more slowly and carefully than the first (the amount introduced being but f̄vss), and yet it has been seen that the patient survived the operation only twelve hours—dying with greatly increased temperature, rapid pulse and breathing, and delirium followed by coma. This is not the place to discuss the cause of these terrible symptoms which follow some cases of transfusion. They are very frequently observed when the blood of any other animal than man is used for transfusing. But even in cases where human blood is used, it is unfortunately true that they may still occur. It has seemed to me that there is greater danger of such results when the operation is quickly performed,

the blood being introduced rapidly; when the amount of blood used is large, and especially when there is disease of the heart or lungs. Whether there may not be still further danger in such conditions as the one we are discussing, where the blood-making tissues are diseased, is a question to be answered by future experience. The results obtained by others, in the few cases of "progressive pernicious anæmia," where transfusion has been performed, are no more encouraging than those in my own case. It was performed in three of Gusserow's cases (*loc. cit.*). In one, between five and six fluidounces of defibrinated blood were injected without any immediate difficulty, but the patient died the following day in mild delirium. In another instance, the same quantity was introduced by direct transfusion, but with no better results, as the patient was seized with vomiting and chill, followed by high fever, and death ensued in about forty-eight hours. In one case only did temporary benefit follow the transfusion, by the direct method, of about five fluidounces of blood.

In the interesting case of Dr. Chadwick's already alluded to, the amount of blood transfused was unintentionally large, f3xj, though, owing to an accident, a small hemorrhage of f3iv or v subsequently occurred from the vein opened in the operation; but the symptoms which almost immediately followed the operation were precisely similar to those reported in my own case (see page 328), and resulted fatally on the following day.

It is therefore evident that in this form of cachexia, and in all others where similar conditions of fatty degeneration of the heart and greatly diminished mass of blood are present, the only way in which any benefit can be hoped for from transfusion, is by introducing very small quantities of blood at a time, and repeating the operation as frequently as may seem desirable. I would also suggest that the blood should be injected into one of the smaller superficial arteries, so as to diminish the risk of serious disturbance of the heart.

Although, however, up to the present time the operation has not been followed by encouraging results, and although we cannot hope for any radical or permanent benefit from its use, I am still disposed to recommend its performance, strictly in the manner indicated, for the purpose of prolonging life and enabling a better trial of internal remedies to be made. If, however, any alarming symptoms should follow the first small transfusion, it would be more prudent not to attempt a repetition of the operation.

It may be advisable, in concluding this discussion, to briefly state the conclusions which seem to be indicated.

1. Progressive pernicious anæmia is identical with the idiopathic anæmia of Addison, and is in no sense a new disease.
2. It is in reality the medullary form of so-called pseudo-leukæmia.
3. As the primary and essential lesion in this and the analogous conditions (leukæmia and pseudo-leukæmia) appears to be an affection of the

chief blood-making tissues—spleen, lymphatic glands, marrow of the bones—causing defective elaboration of the blood, it seems proper to select some name that will indicate this fact, as *anæmatosis*.

4. The changes in the blood consist of great reduction in its mass, with extreme diminution in the proportion of red globules, without increase in the white corpuscles. There are probably also changes in the vital properties both of the red and white corpuscles.

5. The other lesions, chiefly fatty degeneration of the heart and other organs, passive effusions and hemorrhages, are secondary, and depend upon the blood changes.

6. The symptoms are explicable, in great part, by the state of the blood and the condition of the heart.

7. The disease, when once fully established, appears to be invariably fatal.

8. The remedies which afford most prospect of relief are cod-liver oil, arsenic, and phosphorus.

9. Transfusion is only capable of doing temporary good.

10. The operation is not free from grave danger, owing to the feebleness of the heart and the small amount of blood in the vessels; and, in order to be safely employed, the amount of blood injected must be very small (fʒiij), it must be introduced very slowly, and the operation must be repeated at suitable intervals. It adds to the safety of the operation to inject the blood into a small artery instead of a vein.

ART. II.—*Angina Pectoris*. By HAMILTON OSGOOD, M.D., of Philadelphia.

IN looking through the literature of this agonizing disorder, one is struck by the great, indeed confusing, variety of opinions which have been put forth concerning its cause and nature. Its terminology is not less embarrassing. The disease was first described by Heberden in 1768. He gave it the name of "*angina pectoris*." Since his day various authors have affixed to this lesion names which express, to a greater or less degree, the opinion of each writer as to its etiology and pathology.

Thus, we have "*sternalgia*" (Good); "*syncope anginosa*" (Parry); "*stenocardia*" (Brera); "*sternodyn timer syn copalis*" (Sluis); "*neuralgia cardiaca and hyperæsthesia plexus cardiaci*" (Romberg); "*hypercinesis with hyperæsthesia*" (Bamberger); Bouillaud terms the affection "*neuralgia of the phrenic nerve*," and finally we find the common German term

"Brustbraïne," literally "breast quinsy," a poor substitute for better names.

These terms are descriptive and for the most part unsatisfactory. The disease has no common name, although, in English and French works, "angina pectoris," which is too diffuse, is the term commonly used. The Germans generally prefer "stenocardia," which, while it localizes the disease and is undoubtedly a better descriptive title than angina pectoris, does not cover the probable nature of the lesion so fully as the "cardiac neuralgia" of Romberg; which term upon the whole appears to me to be the most intelligent and satisfactory. But, if one were to use this term, he would at once be requested to explain himself, which he would do by substituting the term angina pectoris; which name, while it answers every purpose so far as the sensations of the patient are concerned, neither strictly locates, nor in any way suggests the nature of the complaint. Even the term cardiac neuralgia (which may be understood as including a derangement of the cardiac plexus) becomes poverty stricken when we ask how it happens that during an attack of neuralgia of the heart, the fourth finger and ulnar side of the ring finger of the left hand become numb, cold, and painful. Why not the whole hand, when the whole left arm aches? And, if these symptoms indicate that only the ulnar nerve is engaged, who can explain why it is that other nerves coming down the arm from the brachial plexus are not also affected? That nerves of another sort are involved, is shown by a symptom which I do not find mentioned in any article on angina pectoris to which I have had access, but which came to my notice in the first case of this lesion I ever saw in my own practice, and which I had abundant opportunity to study during the six months of its intermitting attacks. The symptom to which I refer is a decided difference between the radial pulses; a difference which makes them so entirely dissimilar, that, while the right pulse is comparatively full and strong, the left is almost or quite imperceptible. This symptom suggests that, in the affection under consideration, the vaso-motor nerves of the left arm are also subjected to the same influence which affects the ulnar nerve. How does this curious selective influence do its work? If by the route of the spinal cord, as some suggest, why is the left arm alone affected? Why not the right? It is but very rarely that this arm is involved in the attack. And, even in the left arm; since the median nerve receives half its fibres from the inner cord of the brachial plexus, whence also arises the ulnar, why is the latter nerve subjected to effects which, save in rare cases, spare the median? And if the pain sometimes involves the median, why not always? By what process can pain, extending from the cardiac to the brachial plexus, travel over this plexus, run down the inner cord, and be so accurately, and almost invariably, switched off upon the ulnar nerve alone? The fact, too, that the vaso-motor nerves of the left arm are also engaged, increases the general cloudi-

ness of the subject. "As in many other neuralgic affections, so in this, too, is found much that is inexplicable." (Von Dusch.¹)

The singular partiality for certain widely deviating paths, which is² exhibited by the pain of angina pectoris, is well shown by Von Dusch:—

"The neuralgia which arises in the cardiac plexus, radiates over the track of the vagus and sympathetic to the cervical and brachial plexuses, with which these nerves are so intimately united. The pain also involves the major and minor occipital nerves (which arise from the first and from the posterior branch of the second cervical nerves respectively), as well as the supra-clavicular nerves which supply the integument of the upper chest as low down as the fourth rib. The anterior thoracic nerves mentioned by Lussana, and which arise from the brachial plexus, are purely motor; and yet, it is over the internal cutaneous nerves on the inner side of the upper arm, and over the ulnar on the posterior and outer side of the forearm, down to the integument of the fourth and fifth fingers, and in rare cases over the terminal branches of the median in the remaining fingers, that the pain radiates; and these nerves arise from the same plexus as the anterior thoracic. Through the cervical plexus the phrenic nerve is also brought into sympathy, and hence arises singultus; while the œsophageal symptoms (suffocation, difficulty in swallowing, and globus), and the gastric symptom (vomiting), indicate the participation of the pneumogastric filaments."

It is these eccentric routes of the pain which mystify Von Dusch and many another physiologist.

Romberg³ theorizes as follows:—

"So far as the rootlets of the sensitive fibres of the cardiac tissue are concerned, the seat of sympathetic pain is of physiological interest. Müller has already called attention to the fact that the prevertebral cord of the sympathetic is only an *apparent* connective between the upper cervical and the coccygeal ganglia, and that the root-fibres from the spinal cord, after they have entered the prevertebral cord, run only for a certain distance in the same, and then, leaving the cord, lose themselves in the peripheries of the organs, etc. Consequently, sympathetic fibres which emerge from the prevertebral cord are neighbours of cerebro-spinal nerves which supply the upper portion of the trunk. Hence, when pain radiates from organs either of the abdomen or thorax, the sensation necessarily appears in the upper extremities, in the neck, and still higher, in the head. (Henle.) The radiation of cardiac neuralgia, then, allows us to suppose the anatomical contiguity, in the spinal cord, of the sensitive cardiac fibres of the sympathetic and of the sensitive elements of the cervical nerves. That a similar group of symptoms also makes its appearance in primary affections of the cervical district of the spinal cord, cannot be surprising. This was quite overlooked by observers, who, following in the footsteps of Parry and Jenner, suppose that cardiac neuralgia, or, as Heberden first entitled it, angina pectoris, has merely a peripheral origin, and connect the symptoms with a definite organic change, viz., incrustation of the coronary arteries. Others claim that this neuralgia may find its cause in a great variety of morbid conditions of the heart; but with what misjudgment is proven by more recent observers. Whoever doubts this may find enlightenment in Laennec's experience."

This suggests the widely divergent opinions as to the etiology and pathology of angina pectoris. But, while there exists this opposition of opinion as to cause, there seems to be among physicians a general belief that angina pectoris *invariably* includes organic disease of the heart. I

¹ Lehrbuch der Herzkrankheiten.

² Op. cit. pp. 336.

³ Nervekrankheiten, s. 145.

think this belief an error. It may be that those who thus believe, class that form of angina pectoris, in which the heart is apparently sound, under the head of "pseudo" or "simulating" angina. For example, Flint, in the earlier editions of his work on "Diseases of the Heart," described a form of angina pectoris which he termed "pseudo"; but in later editions he omits the term "pseudo" and speaks of angina pectoris *with* and *without* disease of the heart. This modification, so far as it goes, I am convinced is correct. There can be no such affection as *pseudo* angina pectoris, even though the attack may have an hysterical basis, for, in the hysterical cases in which I have met with angina pectoris, the symptoms, varying of course in their severity, invariably included the prominent landmarks of the disease. They were too real in their effects to admit of being considered simulative; and since hysteria, as Romberg acknowledges, can run into real neuroses, angina pectoris may be considered one of them. If a seizure cause, for example, a very marked contraction of the radial artery, or severe pain in a locality so far removed from the heart as is the hand, these symptoms are significant of the real nature of the attack. But if in such case the heart were found to be normal, believers in the invariable connection of angina pectoris with organic disease of the heart would therein find their chief, indeed only, reason for considering the attack of pseudo nature and the cause hysteria. If there were no tangible effects this view might be admitted, but when, setting pain aside, symptoms so sharply marked as numbness, local loss of temperature, unsymmetrical contraction of arteries are observed, there certainly is neither voluntary nor involuntary simulation. But I feel impressed that the exact truth would carry us even further than this. When the attack seizes a person whose heart is sound, I believe the difficulty to be a functional derangement of some nerve or nerves which more or less directly influence the heart, and are capable from their connections of propagating pain elsewhere. As Von Dusch remarks, there must be an "especial cause," but what this cause is, and why the pain seeks such eccentric routes, seems unanswerable. On the other hand, if the spasm complicate some lesion of the heart, I am unable to see how it can be other than a *coincidence*, not dependent upon the cardiac affection. Otherwise, why is it that out of the multitude of cases of disease of the heart and vessels, there are so few which include angina pectoris?

It should be remarked that the pain in the left arm does not invariably extend to the fingers, for I have seen one case in which the numbness and neuralgia stopped at the elbow. But, even in this case, there was the contracted radial at the wrist, indicating that the vaso-motor nerves of the forearm were under the influence of the attack. It may be supposed that other arteries of this arm also become contracted, this condition contributing, perhaps, to the pain which, according to the statements of patients whose forearms were suffering, was not confined to the track of

the ulnar, but involved the whole member. Yet in these cases only the third and fourth fingers of the left hand were affected, thus suggesting that out of the motor nerves of the arm the pain had chosen only the ulnar.

Another point is, that, although the third and fourth fingers of the left hand have a lower temperature than other fingers of the same hand, the entire member has less warmth than the right. The same remark may be applied to the temperature of the whole left arm as compared with that of the right.

To return now to the different opinions of writers on angina pectoris as to the cause of the attacks. The passage from Laennec to which Romberg, as above mentioned, refers, is the following :—¹

"The majority of physicians in England, Germany, and, above all, in Italy, are not the less convinced that angina pectoris is always connected with some organic disease of the heart, that the attacks are very serious, and that the greater number of patients who are attacked die suddenly. These ideas are far from being exact. Angina pectoris of moderate severity is an extremely common affection, and very often exists in individuals who have no organic disease whatever, either of the heart or of the great vessels. I have seen many individuals who have experienced only a few attacks of great severity, but of short duration, and who subsequently became entirely freed from them." And further: "On the contrary, it is true that angina pectoris is frequently coincident with organic affections of the heart, but even in such cases nothing proves that the angina is dependent upon the cardiac affection, for it can arise when the heart is normal. I have made *post-mortem* examinations of the bodies of subjects who were simultaneously subjected to hypertrophy and dilatation of the heart and angina pectoris. In not one instance did I find ossification of the coronary arteries. One of these patients died suddenly during a violent attack of angina pectoris. Any one will admit that the union of so intense a nervous affection with enormous hypertrophy of the heart (which existed in this case) might sometimes produce this result."

Laennec considered the disease a neuralgia, and says: "I believe that its seat may vary, or rather, that a neuralgia which originates in different nerves may give rise to the same symptoms." Hence he argues that the pneumogastric, or the cardiac portion of the sympathetic, may either of them be the point of origin, and that the brachial plexus becomes sympathetically implicated.

Heberden² thought that angina pectoris originates in cardiac cramp or spasm, and mentions the autopsy of a man who died suddenly of this disease. "A very skillful anatomist," says Heberden, "could discover no fault in the heart, in the valves, in the arteries or neighbouring veins, excepting some rudiments of ossification in the aorta."

Friedreich³ divides the disease into *dynamic* and *organic*, and says: "The dynamic (idiopathic, functional, nervous) form arises without complication with any organic affection whatsoever. The organic form is united with organic change in the heart or large vessels." He believes

¹ *Traité de l'Auscultation*, 3d edition, pp. 350, 351.

² Heberden's *Commentaries*, pp. 296, 297.

³ *Herzkrankheiten*, Virchow's *Handbuch*, v. Band.

angina pectoris to be a neuralgia of the cardiac plexus, that dynamic angina is a hyperæsthesia and primary neuralgia of this plexus, and that "organic angina pectoris depends upon calcification, obliteration, and degeneration of the coronary arteries." Bamberger¹ writes: "That the affection is neuralgic can be positively asserted. Whether the real point of origin is to be sought in the sympathetic, the spinal cord, or in the cardiac ganglia cannot be determined. The greatest probability, however, declares in favour of the latter, or, in a larger sense, in favour of the cardiac plexus." He believes the affection to be most frequently dependent upon some material disturbance of the heart, but adds:—

"One must protect himself from the one-sided view, that one particular anatomical condition of the heart is the cause of stenocardia. Hence the old view which makes calcification of the coronary arteries the cause of the lesion is certainly as incorrect as the more modern belief which exclusively accuses fatty metamorphosis and flaccidity of the heart." And finally: "One is inclined to assert that stenocardia is essentially grounded in a clonic spasm of the heart with hyperæsthesia, which condition, however, extremely seldom (perhaps never) depends upon a purely nervous disturbance, but as a rule is the result of a diseased condition of the heart through which an abnormal irritation acts upon the cardiac ganglia or cardiac plexus."

Canstatt,² deriving his conclusions from the autopsies of forty-five fatal cases of angina pectoris (gathered by Forbes), and of which only six were found free from affections of the heart or vessels, believes that "fatal cases of purely functional angina pectoris are rare;" and further says that—

"The common revelations of autopsies in fatal cases consist of striking changes in the cardiac structure or large vessels, especially the aorta." Mentioning a dozen varieties of these changes, he concludes thus: "None of these changes, which are often absent, and not less often present, without causing angina pectoris, contain the essential cause of the disease, although it must be admitted that they are reckoned as factors of the lesion."

According to Stokes—³

"It is greatly to be doubted that angina pectoris has ever occurred in a patient perfectly free from organic disease of the heart or aorta. In the present state of knowledge we must follow Dr. Latham in considering angina pectoris rather a special set of symptoms than a disease having a fixed anatomical character."

Latham believes the affection to be invariably connected with disease of the heart, and, as to its true character, says:—

"Now we are in search of something in the heart which, as a concomitant of pain, may be disabling to its natural functions and capable, according to degree, of hindering or abolishing them altogether. This we find in spasm. In its spasm of smaller degree the heart fails to close freely upon the blood and to impel it freely into the arteries. In its spasm of greater degree it fails to project it altogether. Hence we discern an adequate explanation of the chief phenomena of angina pectoris: it is spasm of the heart."

Stokes confesses that "it is difficult to understand how such a general or local spasm, bearing in mind that the heart is a hollow muscle, could

¹ Krankheiten des Herzens.

² Pathologie u. Therapie, iii. Band, s. 88.

³ Diseases of the Heart and Aorta, art. Angina Pectoris.

occur as would only impede and not destroy the heart's function ; for a complete spasmodic closure of any one cavity ought to cause death by breaking the continuity of the circulation." In regard to this point Flint agrees with Stokes. According to Parry, whose views are also opposed to the doctrine of spasm, "the disease is an example of syncope, preceded by a notable anxiety or pain in the region of the heart, the result of organic lesion, which acts in diminishing the energy of the heart." And he holds that "the symptoms arise from retardation and accumulation of blood in the cavities of the organ." Hence Parry's name for the disease : "Syncope Anginosa."

Köhler¹ considers angina pectoris undoubtedly a neuralgia of the cardiac plexus, "complicated only in severe cases with cardiac spasm."

C. J. B. Williams² affirms that the disease "is commonly associated with organic lesions, especially, but not exclusively, those affecting the aorta and its valves ; but," he adds, "such affections frequently exist without it. So, on the other hand, anginal or neuralgic pains sometimes occur in persons who have no organic disease ; thus resembling other forms of nervous disorder, which, although occasionally excited by the irritation of bony deposits, or other permanent lesions, *may arise from an excessive sensibility developed by more transient causes.*"

Tanner³ says : "It may be remarked that our improved means of observation have rendered it almost certain that this disease is always associated with some important organic affection."

Niemeyer⁴ asserts that "angina pectoris is almost exclusively met with in individuals who are suffering from organic disease of the heart." Mentioning a variety of cardiac affections which were found in fatal cases of angina, he adds :—

"Nevertheless, angina pectoris is not to be considered as a special symptom of these anatomical changes, for none of them is constantly connected with it. It arises under the same form in the most opposed structural changes of the heart, has its paroxysms and free intervals. So that, in fact, we are obliged to consider it a nervous affection of the heart, to which by preference only organic diseases of the organ are disposed. In solitary cases, angina pectoris arises without organic cardiac lesion, especially in aged, fleshy subjects ; in men oftener than in women."

Trousseau⁵ wrote as follows :—

"All the incontestable histories of individuals who during life presented all the characteristic symptoms of angina pectoris, and yet, whose autopsies did not reveal the slightest anatomical change to which these symptoms could be attached, demonstrate that angina pectoris is not necessarily connected with organic diseases. From the absence of appreciable organic change and from the variability of the phenomena, we must conclude that the disease is a neurosis or more precisely a neuralgia. It ordinarily occupies the cardiac nerves which emanate from the pneumogastric, whence it radiates to the cervical and

¹ Therapie, i. Band, s. 484.

² Diseases of the Chest, pp. 232, 233.

³ Practice of Med., p. 394.

⁴ Pathologie u. Therapie, 8e Auflage, i. Band, s. 411.

⁵ Clinique Medical, t. ii., pp. 529, etc.

brachial plexuses. With the majority of clinicians I admit that this singular neurosis may be symptomatic, but I admit it only in the sense that in such case there is a simple coincidence, and that, whatever they may be, organic affections merely afford an opportunity for the development of the nervous lesion which attaches itself to them."

Gerhard¹ believed that "angina pectoris depends upon a functional disease of the heart closely allied to gout, or upon various organic lesions, especially ossification of the valves."

Oppolzer² is undecided as to the etiology of the disease, but thinks that a certain connection exists between angina pectoris and heart disease. He refers to cases of so-called "reflex stenocardia," which were observed in coexistence with diseases of the uterus, kidneys, and liver, and mentions instances which were caused by catarrh of the stomach.

Da Costa³ thinks it "more than highly probable that these so-called spasms of the heart are always linked to some structural change." Mentioning the variety of structural changes which may be coincident with angina pectoris, he concludes that "it is not impossible that combined with all these states is fatty degeneration, which thus would be at the root of the angina;" and that, "whether this view be correct or not, it is undoubted that fatty degeneration is more frequently conjoined with angina than in any other disease."

Flint's⁴ opinion is that "fatty degeneration is sometimes observed, but by no means as a rule." He says further:—

"I will simply remark that the hypothesis which attributes the occurrence of angina pectoris to simple weakness of the heart, has no better foundation than that which attributes it to spasm. Angina pectoris is not always accompanied by evidence of lesions of the heart or aorta. There is reason to believe that it may be a purely nervous affection. Heretofore I have considered true angina as invariably incident to cardiac or aortic disease, considering all cases in which more or less of the symptomatic phenomena are manifested, without the signs of disease of the heart or aorta, as cases of simulated or pseudo-angina. I am satisfied that this doctrine is incorrect, inasmuch as the distinctive features of the affection may be as well marked without as with these signs."

He thinks the paroxysms involve, as a point of departure, neuralgia of the cardiac nerves, and that the disturbed action of the heart in certain cases is due to an affection of the pneumogastries, but does not find this cardiac disturbance a constant element of the paroxysms. Referring to the Heberden theory of spasm, Flint says: "A spasmodic condition of the heart sufficient to occasion such prolonged as well as intense pain, would be incompatible with life."

Von Dusch⁵ expresses his belief that the disease is a neuralgia of the cardiac plexus. He adopts two forms of cases, the "idiopathic or reflexive," which is not attended by changes in the cardiac structure, and the

¹ Diseases of the Chest, 4th ed., p. 427.

² Pathologie u. Therapie, s. 267.

³ Medical Diagnosis.

⁴ Diseases of the Heart, art. Ang. Pect.

⁵ Op. cit.

"symptomatic," which he considers the most frequent, and which involves a complication of some disease of the heart.

Finally, he says: "If we follow the analogy of other paroxysms of pain, in the district of the sympathetic, *e. g.*, cases of intestinal colic, cardialgia, nephritic, and gall-stone colic, we must suppose the existence of a spastic condition of the heart, which causes the painful sensations," and he points to the small pulse as significant of this spasmodic condition of the organ.

Wolff¹ believes that the cause of angina pectoris lies neither in fatty heart nor atrophy of the organ through calcification of the coronary arteries, but finds the reason simply in an imperfect innervation of the heart.

Lancereaux finds the cause in an inflammation (neuritis) of the cardiac plexus, and cites *post-mortem* proof.

Enlenburg² and Guttman conclude from an analysis of cases, and from the experiments of Bezold, that abnormal action of the heart in angina pectoris is due to the influence of the sympathetic on the ganglia of the heart, and, as all the sympathetic fibres of the heart meet in the cardiac plexus, that this plexus is the medium through which the abnormal action is produced.

J. Lockhart Clarke (quoted by Knight, *loc. cit.*) thinks Laennec's view in regard to the proximate cause of the disease has been materially supported by recent inquiries.

Loupas³ believes in an "essential and symptomatic" form of angina pectoris.

Moinet⁴ strictly divides the disease into functional and organic. The first form he confines to young persons; finds it independent of heart disease, thinks it a neurosis due to lack of cardiac innervation, and curable. The organic form, he thinks, is due to a serious affection of the heart, which paralyzes the organ. The paroxysms of the organic form he cannot explain.

Nothnagel⁵ thinks the "so-called angina pectoris" is in many cases due to a spasm of the arteries, and terms it "angina pectoris vasomotoria," deeming the cardiac spasm secondary to a wide-spread arterial spasm.

Bouillaud⁶ thought angina pectoris a neuralgia of the phrenic nerve.

Handfield Jones thinks the disease a neuralgia.

Bellingham called it "dyspnœa of the heart."

Dickson⁷ thought it a functional affection of the heart itself, being depen-

¹ Schmidt's Jahrbücher, 1866, ii. Band.

² Knight's Article on Ang. Pect. in Boston Med. and Surg. Journal for May 21, 1874.

³ Schmidt's Jahrbücher, 1866, ii. Band.

⁴ Schmidt's Jahrbücher, 1870, ii. Band.

⁵ Schmidt's Jahrbücher, 1867, ii. Band.

⁶ Maladies du Cœur.

⁷ Elements of Medicine, p. 366.

dent neither upon a gouty diathesis nor upon disordered state of the stomach (as Butler, McQueen, and Chapman have taught), nor necessarily connected with organic disease of the heart; but admits the possibility of cardiac spasm.

A comparison of these conflicting views, which it were useless to classify, will indicate the confusion which exists among medical writers in relation to angina pectoris. The subject is still enveloped in a haze of uncertainty. Opinions are kaleidoscopic. Every writer has his own view. A search in books for satisfactory information as to the true nature of this neuralgia reminds one of the vexed subject of tubercle. But Laennec's opinions, amalgamated with Romberg's title for the disease, seem the most reliable. It will be noticed that the doctrine of the invariable connection of angina pectoris with heart disease meets with strong opposition,—opposition which is yearly gaining new disciples. That the paroxysms do not depend upon cardiac lesions has been proved to my satisfaction in four of the five cases which I have treated. In the fifth case I believe the attack to have been a coincidence and not a result of the condition of the heart.

CASE I. The first of these cases was that of a young lady who had suffered from hysterical neuralgia for several years. Two years ago, upon one occasion, I greeted her by taking her left hand, and was at once struck by the very great coldness of the little finger. Testing the sensibility of this finger, I found that it lacked ordinary sensation, likewise the ulnar side of the ring finger. Upon questioning the patient, I learned that the entire left arm was numb and somewhat painful, and that a heavy feeling existed about the heart. A few days subsequently the first attack of angina appeared.

Nothnagel might claim these prodromic symptoms as testimony to his theory of primary spasm of the arteries.

The first attack in this case was attended by instructive features. When I reached the patient, I found her unconscious, in a recumbent posture; face somewhat flushed; pulse 140; respiration laboured; left hand relatively cold. Arousing her with questions, she replied in a bewildered manner, invariably using the last word of my question, saying nothing more, and even that much with difficulty. Directing her attendants to remove her clothing, I saw her again after she was placed in bed. The case puzzled me. I gave her brandy. To my surprise the pulse fell within a few minutes from 140 to 90. This furnished the first leading clue as to the nature of the difficulty. Somewhat revived, the patient alternately grasped her left arm, and clasped her hand spasmodically over the heart. I then decided the case to be angina pectoris. Still more revived, patient, using signs, called for pencil and paper, and wrote: "I cannot speak, but feel better." A few minutes later when I questioned her, she pointed to her larynx and shook her head, still unable to speak (thus indicating the implication of the laryngeal nerves), but expression and gesture told me of the pain she was suffering. At intervals I administered tinct. op. in large doses, brandy and laudanum, ammonia and brandy, meanwhile applying mustard over the heart and bottles of hot water to hands and feet. The first attack passed by, but within an hour

came a second. This was followed during the next thirty-six hours by several additional attacks, the patient gradually weakening. Under increased doses of opium and brandy and of brandy and tinct. of valerian she however revived, and during the next two months attacks were mild in character. Then came a paroxysm to which I thought the patient would succumb. The same treatment, supplemented by galvanism (Duchenne), and applications of ice over the heart (Romberg) finally conquered. During the intervals tinct. of valerian was used with very comforting effect, apparently acting as a prophylactic. A new attack appeared, and for the first time I resorted to the nitrite of amyl. Beginning with two drops, I was obliged to increase the dose (given by inhalation) until I used nearly a teaspoonful. The effect was happy. The attack was cut short. In the subsequent three or four attacks the pain was less severe, and teaspoonful doses of nitrite of amyl invariably conquered, and eventually relieved the patient of further annoyance. During the past eighteen months no paroxysms have appeared. These attacks occurred at intervals which comprised a period of six months, during which time the left arm was not only constantly numb, but lost in strength as well as in size as compared with the right.

It was this case which revealed to me the marked difference, in the course of an attack, between the radial pulses. Indeed, I finally found that the contracted left radial preceded an attack, and that the patient simultaneously felt the sensation of an oncoming paroxysm. Guided by this symptom, I frequently administered remedies before any other symptom appeared, and found it invariably the case that so soon as the left pulse resumed its normal size, painful sensation ceased. During a paroxysm the right pulse assumed a size smaller than was normal, but while it was always perceptible, the left frequently disappeared. This condition of things led me to suspect vaso-motor spasm in the left arm. It is possible that the theory of Von Dusch, which attributes the small radial pulse of a paroxysm to spasmodic contractions of the heart, which allow only an incomplete diastole, and hence an imperfect supply of blood to the arteries, is correct. But this occurs during an attack, and does not account for the narrow left radial preceding a paroxysm. Nor does it explain the notable difference in size between the right and left pulses in height of an attack.

In the case just detailed, the routes taken by the pain were sharply outlined. They ran to the left ear, to the left side of the lower jaw, to the œsophagus (causing globus), to the larynx (producing aphonia); involved the phrenic (as shown by singultus); also the brachial plexus and the ulnar to the fingers. The case gave me opportunity to test the whole repertoire of remedies for angina pectoris, which are praised by various writers. Stimulants, opium, and counter-irritants were the most serviceable, yet did their work indolently, and with each new attack gave me a wearying round of action.

Romberg's ice treatment and galvanism, recommended by Duchenne and others, merely increased the discomfort of my patient. My experience

has taught me that nitrite of amyl is the best known remedy for angina pectoris. There are cases on record (Fagge's, etc.) in which it failed. At my hands it has never done so, and although in my fifth case it did not preserve life, it was of great use, as will be seen.

I find that many physicians lack the courage to use so powerful a remedy. This fear, I believe, to be ungrounded. I have never yet seen the slightest ill results from its use, notwithstanding the enormous doses required in my first case. If my patient be a novice to the remedy, I begin with one or two drops, and, watching the effect, increase the quantity until it gives relief. With the exception of the one case in which I used the liquid in nearly drachm doses, I have never been obliged to exceed eight drops at an inhalation. My habit during the administration is to keep my finger on the pulse, and watch the *nose* of the patient. The pulse commonly runs up to 120, 130, 140, and at the same time the nose and afterwards the face becomes deeply flushed. So soon as the nasal flush appears, I at once remove the handkerchief, even though the pulse be not greatly accelerated. Following this course, I have seen nothing but relieving effects. Headache of considerable intensity sometimes temporarily sets in, but should not be considered (unless unbearable) until the heart becomes relieved. Under the effects of the remedy the patient occasionally suffers a general but transient discomfort. Those who wish detailed information concerning the physiological action of the nitrite of amyl, may find it in the valuable and interesting paper by Prof. H. C. Wood, Jr., in the number of this Journal, for July, 1871.

CASE II. This case is that of a young lady who suffers mild attacks of angina pectoris, which cause pain and a heavy feeling about the heart, pain which shoots up the left neck, and pain in the left arm, involving the third and fourth fingers, and producing a contracted left radial.

In this case I have used no other remedy than the nitrite of amyl, to the effect of which the patient is exceedingly sensitive. I am unable to use more than three-drop doses, and generally during the second inhalation, with a spasmodic shudder, the patient flings herself away from the handkerchief. By this time she is, however, invariably relieved. The effect of the remedy upon her is unusually profound. She remains in a semi-unconscious state one to three minutes following the final inhalation. I mention her case in the present tense because, although much better, she continues to send for me at intervals of two or three months, in order to gain the relief which she never fails to find in a single inhalation.

CASE III. was that of a young lady who received the attack while in church. I found her in a convulsive condition as to limbs and fingers, and unable to respond, being apparently unconscious of the sound of my voice. The right hand was occasionally clutched over the heart. There was the very small left radial pulse as compared with the right. Removing the patient to fresher air I gave her brandy with aqua ammoniæ, meanwhile sending for nitrite of amyl. No change had taken place when it arrived. I administered two drops. With the first inhalation the patient, evidently startled, began to shriek wildly, in spite of which I continued the inhalation, and was rewarded by the return of her ability to

she felt relieved of pain, which had been "frightful." After two additional inhalations, which relieved her still more, the patient was removed to her residence, where, after one more administration of the remedy, I left her in comfort. On the following day she complained of a sore and heavy feeling in the cardiac region, for which I did nothing. The next morning she came to my office to ask relief from this discomfort. A single inhalation of the nitrite of amyl relieved her completely, and up to the present time (a lapse of thirteen months) she has suffered no return of the paroxysms.

CASE IV. was that of a fourth young lady, who for several months had experienced a dull pain in the cardiac region, no remedy which she had received having relieved her. I tried the effect of valerianate of zinc and Quevenne's iron. A slight relief was the result. Within three weeks of her first visit, I was one day called to her house. Found her in a paroxysm of angina pectoris. I went prepared with the nitrite of amyl. She could not bear more than one drop. Five inhalations of one drop each relieved her, not only of the paroxysm, but also of all traces of the pain to which she had for months been the victim. Heretofore unable to move quickly, to go up stairs, or drive, without additional pain, she subsequently was, and has ever since been, able to take long walks, dance, run up stairs, and ride horseback, without the slightest sensation of discomfort.

The four patients, whose cases I have cited, were of ages between 19 and 25 years, and the closest examination revealed no hint of any affection of the heart.

CASE V. was a female, æt. 57. The attack for which I treated her had been preceded during the past seven years by four others of a milder type. I found the patient almost in a state of collapse; face livid; surface of the body bathed in perspiration; pulses small, especially the left radial; there was agonizing pain about the heart extending to the occiput, left shoulder, and upper left arm; singultus, globus, great dyspnoea, and difficulty of speech. The heart sounds were weak but normal. The organ was acting irregularly. I administered nitrite of amyl, by inhalation, in five drop doses. The patient experienced immediate relief, and in the course of thirty minutes resumed an almost natural look, colour returning to the cheeks, breathing becoming much freer, and the ability to speak being restored. Attacks of lesser degree appeared during the next hour, which I vainly endeavoured to relieve by hypodermic injections of morphia and a variety of powerful stimulants. The patient was growing rapidly weaker from the effects of the first paroxysm. Under the circumstances I felt unwilling to continue the use of the nitrite of amyl, but nothing else gave her the slightest relief, hence I again administered it in smaller quantity. It quenched the pain, and permitted the patient to assume a horizontal position. I then began to give her strong doses of brandy and aqua ammon. every quarter or half hour, but she gradually and quietly sank into a new collapse, which ended in death four hours after the first attack.

Here was a case in which I found the patient in the very throes of death, out of which I am confident that nothing but the nitrite of amyl could have delivered her. She became sufficiently restored to receive the ministrations of her pastor, speak with her family, and be prepared for the end. Besides this she was freed from pain, and died calmly. The

shock and effect of the first spasm were more than her heart could bear with impunity, as will be seen by the details of the post-mortem.

The autopsy revealed a heart well covered with fat; valves normal; slight atheroma of the aorta ascendens; right ventricle extremely thin and flabby; left ventricle in an apparently fair condition, but rather light in colour; papillary muscles shortened and thickened; liver markedly fatty; no other organs examined. The microscope showed that the muscular tissue of the heart was in a state of decided fatty degeneration. It is probable that this condition of the heart would be accused as the cause of the paroxysms by those who believe that angina pectoris *depends* upon a diseased state of the organ.

Wood, in his *Therapeutics*, thinks the administration of nitrite of amyl, when the heart is in an advanced stage of fatty degeneration, is attended with danger, because of its effects upon the cardiac muscle. In the case last mentioned, however, death would have ensued in a few minutes after I reached the patient but for the quick effects of the nitrite; other remedies were perfectly impotent.

I have presented many conflicting opinions as to the nature of angina pectoris, but, supported by the judgment of acute and reliable observers, have endeavoured to show that the disease neither necessarily depends upon cardiac affections, nor is confined to middle and advanced age, as is asserted by various influential writers; that there may be a functional as well as an organic form of angina pectoris, although I prefer to believe, with Laennec and Trousseau, that even when a paroxysm occurs as a complication of heart disease, it is rather a coincidence than a symptom, for the majority of cases of disease of the heart do not experience attacks of the angina; further, that no attacks are of pseudo or simulative nature.

Finally, I wish to urge upon physicians the great value, in this malady, of the nitrite of amyl. It is nearly invariably certain in its relieving effects, acts almost at once, is quickly, easily, and, with proper caution, safely given, and spares both patient and physician the tiresome, often ineffectual, use of the scores of remedies which are mentioned in the books.

In my hands this remedy has proved equally effectual in asthma (except when patients have been in extreme old age), as well as in the spasm of colic, in which I have used it with success in two cases. I would resort to it in any form of spasm, and I may add that since my paper was put in type, I have met with the happiest results in treating a case of obstinate spasm of the diaphragm by the same means.

ART. III.—*Remarks on the Etiology of Choked Disk in Brain Disease.*

By EDWARD G. LORING, M.D., of New York. (With a wood-cut.)

FEW more interesting problems have ever been offered to the student of medicine in its broadest and most comprehensive sense than that embraced in the connection between the eye and the brain and the ability to determine with the ophthalmoscope the morbid conditions of the one from those of the other.

This is particularly true in regard to optic neuritis, and chiefly in respect of the special form known as "Stauungspapille" or choked disk, the true cause of which has excited and is still exciting so much discussion.

The great difficulty, as well as interest, of the problem is shown quite as much by the eager haste with which the majority have accepted the theories successively offered to them, as by the ingenuity and plausibility of the arguments advanced in support of these theories.

The three most prominent theories brought forward to account for the production of choked disk have been in turn that of Graefe, that of Benedikt, and that of Schmidt. This last was founded upon the physiological researches of Schwalbe, and perhaps because it is the last, and perhaps too a little out of desperation, it has been accepted almost universally, both at home and abroad, as the true explanation of the group of appearances seen in Stauungspapille.

It is to the last of the three that the following remarks will mostly apply, only enough being said in regard to the former two to render a discussion of the last possible.

In a paper read before the Society of Neurology and Electrology, it was shown from the anatomical structure of the eye, from numerous physiological experiments, and post-mortem examinations, that there was every reason for believing that the circulation of the eye, though derived directly from that of the brain, was to a marked degree independent of it. That is to say, that the eye itself through the intraocular pressure possessed a self-regulating power, so that the circulation in the cranium might be seriously interfered with, by ligation of the vessels in the neck, and by other means, and yet that of the eye remain unaffected.

Notwithstanding this apparent want of sympathy between the circulation of the eye and brain, Graefe, nearly twenty years ago, announced the belief that the circulation of the eye might, so to speak, be looked upon as the visible index of the condition of the intra-cranial pressure, so that any increase in this would show itself by a change in the condition of the vessels of the disk, which would be expressed, if sufficiently marked, in the complex of appearances known as "choked disk."

In considering this theory of Graefe, it is important, at the outset, to bear in mind that the term intra-cranial pressure has no reference to the

relative quantities of blood or other fluid at a given moment in the brain, or even to the condition of the cerebral substance, but is simply used in reference to and in comparison with the normal equilibrium which exists between the lateral pressure of the united contents of the cranial cavity, and its resisting walls.

The essential point, therefore, in Graefe's theory was the disturbance of the normal amount by an increase in the lateral pressure, which would show itself at the optic nerve entrance. The manner in which this increase in pressure was brought to bear on the somewhat distant circulation of the eye was, according to Graefe, purely mechanical, and is briefly as follows :—

If the intra-cranial pressure be increased, this will be reflected in all directions, and of course exert its influence upon the cavernous sinns. As the vein is more compressible than the artery, it will be the first to yield to the pressure. An impediment to the return circulation through the ophthalmic and retinal vein would take place, and there would be a banking up, so to speak, of the venous current, especially when it met the constriction, or collar, formed by the sclera round the ocular end of the nerve as it pierces the globe. Here, on account of this anatomical constriction, swelling from irritation of the surrounding parts would occur. This would only increase the trouble till almost complete strangulation took place, followed by all the peculiar ophthalmoscopic signs, and morbid appearances, shown in microscopic sections.

The peculiar symptoms of *Stauungspapille* might, according to Graefe, spring from any cause which increased intra-cranial pressure, such as tumour, meningitis, dropsy of the ventricle, hypersecretion of the sub-arachnoidal or cerebro-spinal fluid. Nor did the size or position of the tumour or growth have any significance. It might be the size of a cherry or as large as an orange; and it might occupy any position, provided irritation enough was created to produce an increased pressure of the contents of the cranium. Here, too, it should be borne in mind that all cases of disease, whether of the brain or investing membranes, are not necessarily followed by increased intra-cranial pressure. On the contrary there is no reason why the originally normal tissue should not be supplanted in the cavity of the head, as it is so often in the eye, by an abnormal growth which so gradually takes the place of the pre-existing tissue as to cause no disturbance to the normal equilibrium of pressure. That this may happen in the case of large growths, experience proves; while on the other hand the smallest growth for some unaccountable reason may excite so much irritation to the surrounding parts, or in some subtle way so affect the vessels themselves, as to produce increased pressure, either through excess of the fluid or expansion of the solid contents of the cranium.

That there should be intermissions and remissions of these attacks of inflammatory irritation, when the disease itself and its influence on the

surrounding parts should remain quiescent, is as natural here as in other parts of the body.

Graefe's theory was considered sufficient for some years, supported as it was both by clinical observation and post-mortem examinations. Objections to it gradually began to be heard, however, and these took a definite shape in a paper written by Benedikt in 1868.¹ He asserted: First, that the growth was often too insignificant and of too mild and non-inflammatory a nature to set up such a degree of pressure in the head as to affect so distant a circulation as that of the eye. Secondly, that clinical experience taught that the neuro-retinitis might abate entirely without any reduction of the tumour. Thirdly, it was hard to see why pressure should offer hinderance to no other circulation, and should set up morbid action in no other nerve district than that of the eye.

Benedikt's views in opposition to the pressure theory and those in support of his own are too numerous and too long to receive further discussion here, though much might be said, as indeed it has been, in opposition to his arguments against Graefe's views, while much that he offers in favour of his own theory is untenable.² The theory itself was, that some irritation was brought to bear on the sympathetic nerves, and that this irritation was propagated in some subtle way to the vasa-motor filaments which regulated the circulation of the disk;—in other words, that the neuritis was one of abnormal innervation of the sympathetic system.

This theory of Benedikt's is certainly a very plausible one, and there is much in its favour which has never been satisfactorily refuted, though this in itself may be due to its vague and intangible nature, which seems to defy anything like actual demonstration.

Following the theoretical objections of Benedikt came the anatomical ones of Sesemann.³ His objections to the pressure theory are important, and are as follows:—

1. "The cavernous sinus is a blood canal surrounded by such impervious walls as are rarely met with, and a pressure sufficient to really compress this must, since the pressure within the cranium must be regarded as equal in all directions, exercise enormous pressure on all the other bloodvessels.

2. "Both the superior and inferior ophthalmic vein anastomose extensively with one another, and also with the facial vein, and although the vena centralis retinae empties itself almost immediately into the cavernous sinus, yet it previously anastomoses with the superior ophthalmic vein. So long then as the facial vein is open, the blood from the central vein of the retina could pass unimpeded through it.

3. "All increase of cerebral pressure is not followed by neuritis.

4. "Optic neuritis is sometimes one-sided, and has been observed on the side opposite the eye affected."

Forcible as these objections are, they are not, however, it seems to me, conclusive. In the first place, it has never been proved that increased

¹ Elektrotherapie, Wien, 1868, p. 249.

² Archiv Anat. Phys., etc., pt. 2, p. 154, 1869.

³ For a discussion of this subject see Allbutt, *On the Ophthalmoscope*.

pressure must necessarily be extended equally in all directions, as it no doubt would be were the cranium a simple sphere. It must, however, be borne in mind that the brain is divided by numerous partitions, in the shape of fibrous and inelastic membranes, which are at numerous places bound down firmly to bony attachments, so that it is easily conceivable that pressure sufficient to exert an influence on some delicate nerve fibres might exist in one part of the brain and yet not extend itself to all others, or, the pressure existing in one portion of the brain, its effects might be propagated to a more distant portion through the medium of the nerves, especially the vaso-motor filaments.

The fact that neuritis optica occurring on one side only could not exist under the pressure theory, is based on the assumption that the pressure is always equally distributed in all directions.

Another forcible argument against Graefe's theory might be brought forward in the fact that we may have the return circulation through the ophthalmic vein interfered with, caused, as shown on the autopsy, by some obstruction in the orbit or in the vein itself, and yet no impediment to the circulation through the retinal vein occur. Cases, though rare, are yet occasionally met with, where exophthalmos of a large amount exists on one side, and where marked interference to the return circulation through the ophthalmic vein is undoubtedly present, with a large degree of distension and tortuosity of the supra-orbital and other superficial branches of the facial, and yet where the ophthalmoscope shows that the fundus of the eye is perfectly normal, and where there is not a particle of interference in the circulation of the central retinal vein. This could not be if the theory of choked disk was based on a mere mechanical impediment to the return blood into the sinus by way of the ophthalmic vein.

The fact that in these cases, the retinal circulation was undisturbed would go to support Sesemann's view, that, if the passage through the ophthalmic to the sinus was blocked, the blood from the central vein of the retina could pass unimpeded by the facial vein by means of the anastomosis which exists between this and the ophthalmic vein.

About the same time that these objections were brought forward by Sesemann, Schwalbe¹ was making his investigations into the lymph spaces of the eye and optic nerve. He found, that, by injecting fluid under the arachnoidal membrane of man as well as of the lower animals, that is to say, into the subarachnoidal space, the fluid forced itself under a moderate pressure into the space between the outer and inner sheath of the optic nerve.

These experiments by Schwalbe were followed by others of the same character by Schmidt,² Wolfring,³ and Michel,⁴ and others. And although

¹ M. Schultze's Archiv, Bd. vi., 1869.

² Archiv, Bd. xv. 2, 1869.

³ Archiv für Ophth., Bd. 18, 2, 1872.

⁴ Archiv für Ophth., Bd. 18, 1, 1872.

there were discrepancies of greater or less significance in the results obtained by the various observers, all agreed upon the one important point which interests us here, and that is, that fluid would pass from the sub-arachnoidal space in the brain into the space formed by the two sheaths of the optic nerve. It was claimed, therefore, that the fluid when it arrived at the ocular end of the optic nerve, would occasion stasis of the circulation and all the phenomena expressed in neuritis or choked disk; and it is claimed also that this must be the true explanation, because fluid has actually been found between the two sheaths in some of these cases which have come to autopsy.

But it by no means follows, it appears to me, that, because fluid has been found in some cases of neuritis between the sheaths of the nerve, this necessarily has come down from the brain.

There are certain anatomical considerations which would render such a passage of the fluid very difficult. For, admitting that the fluid was in such quantities within the cranium as to fill the spino-arachnoidal space and the base of the skull, and admitting, too, that the pressure was sufficient to force the fluid between the sheaths, there are still other anatomical factors which would play an important part, both as cause and effect. For it must be remembered that the optic foramen is a bony canal of only a moderate diameter, and that the optic nerve and investing membrane fit it pretty exactly. Moreover, through this bony canal passes the ophthalmic artery.

If fluid was forced between the sheaths in this bony canal, it would cause the same irritation at this end of the nerve that it is claimed it does when it has arrived at the bulbar end. There would be swelling of the parts, with compression, especially as they are inclosed within bony walls. Either the nerve would be compressed and vision would suffer, or the ophthalmic artery would be compressed, and the circulation of the orbit would be interfered with. Now, it often happens that vision in the most pronounced cases of *Stauungspapille* is not disturbed,¹ nor is there the slightest interference with the circulation of the orbit.

Again, if fluid was forced by these resisting parts, irritation would be set up, and we should have inflammation not only of the investing membranes, but also of the trunk of the nerve, and it usually happens in choked disk that the end of the nerve is perfectly free from disease, while the end near the eye is affected.

Moreover, if swelling of the cranial end of the nerve and the surrounding parts did take place, then not only the two sheaths of the optic nerve would be pressed together, cutting off their connection with the corre-

¹ Of course there are cases in which there has been compression of the nerve within the bony canal, caused by inflammation of the investing sheaths and nerve-trunk, with swelling of the parts. In these cases vision is affected; at times even to total blindness.

sponding spaces in the head, but the inner sheath would also be pressed against the trunk, and the lymphatics¹ proved to exist beneath this sheath would also have their connections severed, and their contents, instead of being carried into the cranial cavity, would be backed up in the nerve, and especially between the sheaths. The expression of this stasis would then be not so much at the cranial end of the nerve as at the ocular, for at the cranial end the sheaths are in more intimate relation with the trunk of the nerve, and the nerve is more closely embraced by the tendons of the various muscles and orbital tissues. It would, on the contrary, have a freer expansion near the bulb, and this is just where we find the distension of the sheath the greatest.

Now, in regard to this distension of the sheath. It is no new thing. It was noticed by some of the earlier writers, and later by Van Ammon.² It was shown to be due to two causes; first to direct inflammation of the sheaths themselves, by which they became very much thickened. Secondly, by a collection of fluid between the two sheaths themselves, and within the interstices of their parenchyma. In both cases the extension had a *cone-like form, the base of which was near the eye.*

If, now, this distension of the sheath is due to an inflammation of the sheath itself, either interstitial or œdematous, then we ought to find this condition of things more frequently with neuritis descendens, than in simple choked disk, and rather in the more advanced cases than in the fresh. And this is just what we do find on autopsy, as was pointed out by Graefe in his first article.³ Here Virchow made the autopsy, and says: "The optic nerve showed in its entire length a very strongly marked thickening of the neurilemma of the nerve, and a cystoid or bladder-like separation of the same from the trunk of the nerve itself; and besides this perineuritis, there were the appearances of an interstitial neuritis for the entire length of the optic tract."

Von Ammon⁴ several years before observed the same thing, and states that separation between the two sheaths to such a degree as to form bulbous projections does not, as a rule, take place before cavernous openings in the parenchyma of the sheaths themselves have been formed.

To render this more clear a cursory glance at the anatomy of the part may be of assistance.

According to the latest investigations the optic nerve is provided with an outer and inner neurilemma. The outer is called by Schwalbe, from the fact that it is a direct continuation of the dura mater, the dural sheath, the inner, from its analogy to the pia mater, the pial sheath. Between

¹ Schwalbe and Wolfring, loc. cit.

² Archiv für Ophth., Band vi. ab. 1. p. 15, 1860.

³ Zehnder's Monatsblätt. 1864, p. 369. For this and other cases see, also, Archiv für Ophth., Bd. xii. ab. 2, p. 114.

⁴ Archiv für Ophth., Band vi. ab. 1, p. 15, 1860.

the two is a space which is called the subarachnoidal space of the optic nerve, which is the continuation of the subarachnoidal space of the brain.

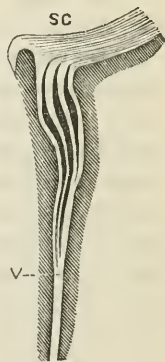
"The dural sheath," continues Schwalbe,¹ "is the thickest of the investing membranes of the optic nerve. As this sheath is the direct continuation of the dura mater, and passes directly into the sclera, it partakes in a marked degree of the characteristics of both these membranes. Its thickness, however, is not always the same, but amounts, on the average to 0.5 m. (Henle). Towards the bulb it increases in thickness, and what was in its earlier course a single fibrous membrane, at a distance of about 7 millimetres from the entrance of the nerve into the sclera splits, at first into two or three, and finally into four lamellæ, which are separated from each other by small interspaces. Each of these divisions passes over directly into the sclera."

The drawing, which is borrowed from Schwalbe, shows this separation of the dural sheath (v) into its four lamellæ and their continuation into the sclera. (sc.) Besides the peculiar arrangement of the sheath, as shown in the drawing, there is another important anatomical point which should be kept in mind, which is, that this part is the most vascular portion of the nerve, containing, besides the vessels proper to the sheaths, ramifications from the central artery, and branches from the short ciliary arteries through the scleral ring.

Bearing this in mind, and also the fact that a neuritis, intra-ocular or otherwise, might be easily propagated to this part of the sheaths, we can readily understand why the dilatation occurs so frequently at this part of the nerve, and why it is cone-shaped with its base towards the globe. And we can further understand how it may well happen, when the inflammation has gone so far as to effect the parenchyma of the sheaths in this part, that there should be cavernous openings between the lamellæ noticed in the earlier observations.

What I wish to emphasize is that the distension of the sheath is due to disease of the sheath itself, and has no necessary connection with the fluid from the brain; and I have not seen a single case, in which the autopsy has been made by these observers, to prove that the fluid came from the brain, that the sheaths of the optic nerve were not themselves diseased, from Mitchell's case down to those reported by Dr. Norris at the last meeting of the Ophthalmological Society at Newport (1874). Again, how does it happen, as pointed out by Iwanoff² and von Ammon,³ that the nerve and sheaths are sometimes found diseased at both ends, and the intermediate portions healthy?

I have, myself, seen a similar case, which was one of tumour of the



¹ Handbuch der Augenheilkunde Graefe and Sæmisch, part 1, p. 332.

² Zehender, 1868, p. 422.

³ Loc. cit.

brain. The ophthalmoscopic appearances just before death were those of a virulent neuritis with much swelling of the disk and surrounding tissue. At the autopsy the sheaths of both nerves were found diseased for almost their entire length, with bulbous extensions near the globe. At about the centre of the intra-orbital portion of the nerve of the left side, there was a deep constriction of some two lines in extent; this surrounded the stem of the nerve tightly like a collar. It was caused simply by the non-extension of the nerve at this point under the inflammatory process, the sheaths being here in contact with the nerve-stem. How is it possible in such cases as these that the distension at the ocular end should be caused by fluid passing from the brain through the arachnoidal spaces, unless, indeed, it goes through the stem of the nerve and thus round the constriction? Such an explanation is certainly far-fetched, if not impossible.

These being some of the negative proofs against the theory, now for the positive.

If, in an aggregate of symptoms and appearances in any disease, we can eliminate certain existing phenomena, and the character and appearance of the disease still remain exactly the same, it is a proof positive that the excluded phenomena could not have been essential factors in the production of the disease, although they might have existed with it. So, too, if we could point to a single authenticated case made by a competent observer in which the ophthalmoscopic picture was typical of choked disk, and the autopsy showed that there was neither any disease in the nerve-trunk nor any distension of the sheaths, then it would be a proof positive that fluid from the brain could not have been the cause of the choking of the disk. Now, we can not only point to one such case, but to many. It was precisely on this point that Graefe insisted so strenuously, namely, that in those cases which were examined ophthalmoscopically by him, and at the autopsy by Virchow¹ and Schweigger,² the changes were limited to the *intraocular end* of the nerve—the disk—and did not extend backwards beyond the lamina cribrosa, as a rule, though in some cases the inflammation was propagated backwards towards the brain (*neuritis ascendens*.)

Is it not then more reasonable, when we find the cranial end of the nerve and its sheaths healthy, and the ocular end distended, to believe that the distension comes rather from interference with the circulation in and about the ocular end, which we know, from the labours of Zinn, Jaeger, and Leber, draws its blood from so many sources, than to believe that the fluid has filtered down through a long track without leaving a trace of its existence or passage in the nerve or its sheaths, to finally bulge out round that part of the nerve which is nearest the eye? As a single exam-

¹ Archiv für Ophth., Band vii. ab. ii. p. 63, *et al*

² Ibid.

ple of this, one of Iwanoff's cases may be cited. This was a case of well-marked Stauungspapille, which had been examined, for a space of three years before death, with the ophthalmoscope, by both Mauthner and Becker. It was shown by Iwanoff,¹ at the autopsy, that the changes were limited to the intraocular end of the nerve—the disk—and did not go beyond the lamina cribrosa.

But it may be said that these examinations by Schweigger, Virchow, Iwanoff, and Von Ammon were made before Schwalbe's investigations had been made known, and that the attention of these observers was not directed critically to the condition of the sheaths. But this is precisely what it was directed towards, as they were drawing conclusions between the conditions of Stauungspapille, where only the intraocular end of the nerve was affected, and the more diffuse form of neuro-retinitis, where the nerve, not only within the cranium, but also in the orbital portion, with its sheaths, was diseased and distended.

But there are cases of autopsy made since this theory was fully ventilated, and made expressly to establish this point. For example, the case in which the autopsy was made by Mr. Swanzy, of Dublin, and figured in Allbut's book. The disease was confined to the disk, the nerve-trunk itself being perfectly normal. To this may be added the following case of Pagenstecher.²

The man died of a tumour in the right middle lobe as large as an orange, which the examination showed to consist of a large, irregular mass, like clotted blood in various stages of transformation. Before death there were the ophthalmoscopic appearances of choked disk. At the autopsy the size, colour, and consistence of both nerves appeared perfectly normal throughout their entire course up to the globe.

“The exterior and interior sheath, as well as the intervening connective tissue, do not exhibit any abnormality even in the immediate neighbourhood of the bulb. The changes were limited to the lamina cribrosa.” And what is more, the autopsy showed that not only was there no fluid between the sheaths, but also that there was none in the cranial cavity, for “the cranial bones were remarkably thin and diaphanous. The dura mater was natural. The proper membranes dry on surface from swelling of the brain. No lymph anywhere.”

I have myself seen two cases where there were all the ophthalmoscopic signs of choked disk during life, and where the autopsy showed a reduction of the normal quantity of fluid in the cranial cavity.

Again, how can we explain the occurrence of Stauungspapille in a single eye on this principle? For, if the fluid was forced through one optic foramen, why should it not be through the other? It may be suggested that the growth might occupy such a position as to shut off the

¹ Zehender, 1868, p. 442.

² Ophth. Hospital Reports, vol. vii., pt. 2, p. 126.

fluid from the optic foramen of one side, and allow it to pass to the other. But this cannot hold good, as is conclusively proved by some cases, of which the following, from Pagenstecher, is an example.¹

"The patient died from a large gliomatous tumour in the left hemisphere. The left eye, at the autopsy, was seen to be perfectly normal, while in the right the papilla was very prominent, measuring four times the height of the left from the lamina cribrosa. There was an enormous distension of the external sheath *near the eye*, but at about the distance of half an inch from the insertion of the nerve into the sclera this pretty closely invested the nerve, while in the other eye the sheaths bore their normal relations to the trunk of the nerve."

Such cases of one-sided neuritis are utterly irreconcilable with the theory that the choking of the disk has been caused by fluid being forced from the brain between the two sheaths of the optic nerve. They are also inconsistent with Graefe's theory of a general increase of pressure which is equally distributed through the cranial cavity. They could only exist under the pressure theory with the admission that the pressure, instead of being equally distributed through the whole brain, might be restricted to a particular region. That such a restriction might exist does not from anatomical reasons appear impossible or indeed improbable. This would apply especially to the base of the brain, or to that portion which lies beneath the tentorium.

It would seem then, if the foregoing arguments are of any value, that, although Graefe's division of neuritis into two kinds—the descending and ascending—is borne out, his explanation of the cause of choked disk is insufficient, though it must be admitted that increased intra-cranial pressure is an important factor in its production.

It would also appear that the theory of the production of choked disk based on fluid passing from the cranial cavity between the two sheaths of the nerve is untenable; and further, that the appearance of the fluid at the ocular end of the nerve is rather the result of a diseased condition of the trunk and sheaths of the nerve than a cause of choked disk.

It would seem then, after all, that Benedikt's theory is the least assailable, though it may be so, as some claim, because it is the least demonstrable.

In view of these facts, might not the true explanation be found in a combination of the two theories?—that is, that choked disk, in connection with brain disease, is the expression of a compression within the head of certain nerves, and that the effect is transmitted along such nerve fibres as run to the eye and preside over the blood supply and maintain the healthy processes of waste and repair at the disk, on precisely analogous grounds as that the cornea is affected in certain morbid conditions of the fifth pair.

¹ Ophth. Hospital Reports, vol. vii.

This interference with the normal condition of the nerves by compression might then take place from various causes, either by imprisonment of the fibres by the morbid growth, or by direct pressure by this latter upon the nerves. Again, it might occur by a general elevation of the intra-cranial pressure, which extended equally in all directions, or which was confined to a particular region. The fact that the cavernous sinus contains branches of the sympathetic system might have some weight in the question.

My excuse for dwelling so long on so technical a point is so much better expressed in the words of a colleague, that I most willingly shield myself behind them. Dr. Noyes, in his recent report on ophthalmic literature, says :—

“The researches of Schwalbe and Schmidt have done so much to establish an intimate connection between the optic papilla and the brain, both in anatomy and pathology, that the subject cannot be dropped until it has been completely exhausted. In fact, it is imperative that we should possess the most absolute and complete knowledge of the whole matter. Without it our inferences from the phenomena of the optic disk must be uncertain and vague. On the one hand, we should fail to properly appreciate all that occurs in intraocular pathology, and still more egregiously must we miss the mark when we begin to reason from these data to intra-cranial lesions. The papers above quoted supply us with important facts. But, with the most exact knowledge we can have, can any critical and logical observer with the ophthalmoscope be willing to use the word *cerebroscopy* when he is studying only the optic papilla?”

This question, so far as our present knowledge extends, must certainly be answered in the negative, for the simple reason that it is becoming every day more apparent that we may have the ophthalmoscopic appearances which are typical of choked disk, and which are not connected with any cerebral trouble whatever, but are due simply to some orbital or even intraocular disease.

Interesting and important as the investigations of Hiss, Arnold, Schwalbe, and others into the lymph spaces of the brain and eye really are, they nevertheless do not appear to have cast any light upon the etiology of choked disk, the true cause of which seems to be as great a mystery as ever.

It is unnecessary for me to add a single word in regard to the great merits of the ophthalmoscope as an essential, at times even an indispensable, agent in the diagnosis of brain disease. This is recognized throughout the world. It is only the ignorant who alike underrate its virtues or over-estimate its capabilities.

ART. IV.—*On the Diagnosis of Mild Cases of Typhoid Fever, with a consideration of the Afebrile and Abortive Forms.* By W. W. JOHNSTON, M.D., one of the Physicians to the Children's Hospital, Washington, D. C.

THE difficulties which attend the recognition of the milder cases of typhoid fever are due to the unlikeness which they bear to the more common and characteristic forms of the disease. The departures from the accepted type are in two directions: either in a loss of intensity of the morbid phenomena with a feeble development or absence of the pathognomonic symptoms, or in a considerable shortening of the attack. The embarrassments of diagnosis, therefore, occur in mild and in short cases.

It is proposed to consider, first, the symptomatic history of the milder forms, and to endeavour to ascertain the minimum state of symptoms which warrants the diagnosis of typhoid, and then from the observation of shorter attacks to determine their narrowest limit in time.

I. In order to reach a decision as to what is the feeblest manifestation of the typhoid infection, we might answer the following questions: Does any combination of the most constantly associated symptoms, or does any one symptom, exist of necessity in typhoid fever? What is the most reliable symptom in the absence of all pathognomonic phenomena?

The *abdominal symptoms*, being the most characteristic and most frequent, should be first noticed. Louis relates a case (Obs. 41, *Gastro-entérite*, vol. ii. p. 332) that ended fatally through perforation of the intestine, in which the symptoms were so insignificant, that had the case gone on favourably a simple "*embarras gastrique ou intestinal*" would have been thought to exist. Murchison (*Lancet*, Dec. 10, 1870) reports the following:—

"A boy, aged 17, was out of sorts for ten days, stopped work on October 6; had no diarrhoea, and continued to walk about until the afternoon of the day preceding admission into the hospital; he was then taken with sudden pain in the abdomen. When seen he had all the symptoms of acute peritonitis. He died October 16, in twenty-four hours after coming into the ward. After death typhoid ulcers were found in the bowel, answering to about the eighteenth or twentieth day of the disease. One patch of Peyer was the seat of a deep ulcer which had opened into the peritoneal cavity; 'the contents of the bowel were found in the peritoneum, and there were signs of extensive recent peritonitis.'"

Bennett (Case CCXXI., *Principles and Practice of Medicine*) gives the history of a man who died on the sixth day of a relapse; there was no tympanites, and the bowels were constipated until the day of his death. A perforation was found in the jejunum; Peyer's patches were prominent in the lower part of the ileum, and there were several ragged ulcers in the same locality. The peritoneum was congested, and there were flakes of lymph on the surface. Diarrhoea was not present in three fatal cases

observed by Louis (Obs. 8, 23, 53), where the symptoms were violent, death occurring in the first on the twelfth day, in the second on the fourteenth, and in the third on the thirteenth day, from perforation and peritonitis. Jenner also had two fatal cases without diarrhœa. Murchison, in commenting on his statistics, which showed diarrhœa in 93 out of 100 cases, says—

“Subsequent experience has satisfied me that diarrhœa is absent in a much larger proportion of cases than I have here indicated (in fully one-fifth), and that these cases are usually mild and recover. The fatal cases show that the gravest abdominal lesion may exist without its most closely related symptoms, hence it is but just to infer that very many mild attacks fail to show any signs of intestinal disturbance. More extended observation will alter our view of the frequency of diarrhœa.”

The cases reported in this paper bear upon the point in question.

If *tympa[n]ites* be considered, it will be seen not to be a necessary accompaniment of enteric fever. It is said to occur in 79 per cent. of all cases. In 21 of 100 cases recorded by Murchison, the abdomen was flat throughout. In one-half of the mild cases of Louis it did not occur. In the attacks of children, Rilliet and Barthez assert that it rarely persists during the whole attack; it disappears at the end of the fifth or eighth day, and even in the most serious cases the abdomen may retract. It is probable that the importance of this symptom is over-estimated. In a given case two observers may come to opposite conclusions as to the fact of meteorism. Moreover, in childhood abdominal gaseous distension is almost a physiological state.

Passing in turn to the *rose rash*, which has a percentage of 76 in all cases, we find that it was seen in 4606 of 5988 observations in the London Fever Hospital during a period of twenty-three years. It is less common under ten years of age and over thirty. In 111 cases in childhood it appeared in one-fourth only. (Rilliet and Barthez.) The eruption is no measure of the gravity of the illness, and affords no indication of its course; it may be absent in the gravest forms. Bennett mentions three instances of this. In one (Case CCXIX.) there was considerable diarrhœa with marked bronchitis, partial pneumonia, frequent and feeble pulse, stupor, profuse sweats, and great prostration. The patient remained seventy-three days in the ward. “No eruption could be detected during the whole progress of the disease, though daily looked for with the utmost care.” In the second (Case CCXX.) death occurred on the twenty-fourth day. The symptoms were diarrhœa, tenderness in the right iliac region, sordes on teeth, confusion of intellect passing into insensibility. No eruption was observed. The post-mortem revealed enlarged Peyer’s patches and ulceration of the mucous membrane with other lesions. The third example (Case CCXXI.) presented above, of relapse terminating fatally, is of less importance; no spots were seen when under observation. The absence of this phenomenon does not, therefore, exclude the idea of typhoid fever.

Enlargement of the spleen is said by Louis to occur in 36 per cent. of all cases, but is much more common in those who die before the thirtieth day than in those who survive this period. Taupin found the spleen enlarged in one hundred and nine out of one hundred and twenty-one cases. Rilliet and Barthez dissent from this experience, having seen no increase in size but in twenty-six out of forty-four cases.

In this country and city the percentage is smaller than this; it did not occur in any of the mild cases recorded in this paper, nor to any appreciable extent in any severer cases seen during the last five years. It has little or no diagnostic value, more especially as it is a common lesion of the malarial fevers.

The opinion to which the above review leads is that the so-called pathognomonic symptoms of enteric fever are neither constant nor necessary. If the gravest lesions can run their course without affording certain evidences, or even any evidence at all, of their existence in by no means an inconsiderable number of cases, are we not justified in the belief that a slight degree of medullary infiltration of the solitary glands and patches is very often unassociated with diarrhœa, tympanites, rose spots, or enlarged spleen? The intensity of the symptoms, as a rule, is the measure of the disease; the probability of the absence of the symptom increases as the disease grows milder. A diminution in the number of the associated symptoms occurs *pari passu* with a reduction in their intensity.

Hence typhoid fever cannot be said *not* to exist when the above mentioned symptoms are absent, either singly or collectively, for our senses fail to discover before phenomena cease to exist.

This line of argument when pushed to its extreme would show that neither the specific nor accessory symptoms are required to constitute enteric fever, and that there is no one condition—no one altered function, in a hypothetical case, where all the phenomena of disease are reduced to their lowest level, which affords the data for determining the value of the morbid state or even that there is any morbid state at all.

This result would be perfectly just and warranted by observation as well as by reasoning. Liebermeister says "there are many cases that run a milder course; we find them less and less severe, till finally we come to those so mild that they scarcely warrant the name of disease."

But there is one symptom of which we have so far taken no account, but which lends itself to our study, and becomes a means of determining the gravity of the case as well as the nature of the disease when other modes of observation fail. *Fever* is the most constant symptom of typhoid fever; it is the last to disappear in the progress from disease to health; it characterizes the mild as well as the severe; it becomes, therefore, the only standard of comparison between all grades of the affection, and the only approximatively positive means of distinguishing the patho-

logical from the physiological state. Can we give a greater value than this to fever, and say that every case of typhoid disease must of necessity present an increase of animal heat?

Every disease, according to Virchow (remarks at meeting of British Medical Association, *Med. Times and Gazette*, Aug. 16, 1873), is a compound phenomenon, and to be understood must be divided into its elementary components. Fever depends on various local and general influences; it can be separated into a series of elementary processes, and is not "essential" to the local affections with which it occurs. The fever of disease can cease, as in pneumonia, the unity of the attack ending, but the "local affection can make further progress, and it can persist by a series of dangerous metamorphoses."

If this be a just opinion, the lesion of typhoid fever can persist to dangerous tissue change independently of fever. In the mildest forms of the malady, where "the local and general influences" are in a minimum state of activity, the resultant "compound phenomenon"—fever—might be absent altogether. Liebermeister (*Ziemssen's Cyclopædia*, Art. Typhoid Fever, p. 123) expresses the belief, which he supports by facts observed by himself and others, that there is a typhoid infection without fever. In his wards in 1869, there were 206 cases of well-developed typhoid fever, also twenty-nine cases of febrile and 139 cases of "afebrile abdominal catarrh," no inconsiderable portion of which, he believed, was to be imputed to typhoid infection. In 1870 there were 161 cases of typhoid, 26 cases of febrile, and 111 cases of afebrile abdominal catarrh. The proof of the nature of the diarrhoea in many instances was found in the presence of enlarged spleen, rose rash, marked languor and debility, detention in bed for four weeks or longer, with other more or less characteristic symptoms. The pulse was generally slower than normal, 48 to 60 to the minute, becoming more frequent as the other symptoms improved.

In Basle, where typhoid fever prevails to a great extent, it is not uncommon to find an evident enlargement of Peyer's patches in persons who have died of other diseases or from accident. Vallin relates a case (*Archives Générales de Méd.*, Nov. 1873) of severe intestinal hemorrhage in a typhoid patient who had previously been free from fever, and again of a fatal case of typhoid fever, death being caused by peritonitis, in which likewise no fever had been present until the peritonitis occurred. In his article he supports the following proposition:—

"Typhoid fever in rare cases can arrive at advanced periods of its evolution and reveal itself suddenly by grave and even fatal accidents without the temperature, as determined by the thermometer, sensibly departing from the limits of the normal state."

It is not important to decide at this point the question of the possible existence of an afebrile typhoid infection. The conclusion in view is that the specific disease may be so stripped of its familiar dress as to lose all

semblance of its nature, and escape detection except for the closest scrutiny. But the fever is the most persistent, the almost essential feature of its life; the most constant phenomenon in all forms and grades—the severest and the mildest—and hence becomes the only standard by which one case may be compared with another, or by which a determination of its nature can be reached.

The answer to the question—what is the minimum state of symptom which will lead to a recognition of typhoid fever? will be found only in the study of the fever of mild cases.

All cases are mild which have no higher evening exacerbation than 104° F., or in which this high point is not attained more than once or twice. Starting from this we pass from degree to degree in the descending scale until we reach afebrile states. The following series of mild cases illustrates various modifications of intensity:—

CASE I. M. Y., male, æt. 42, robust constitution, resided with his family in a house without water-closets. A privy in out-house one hundred yards off, was used by all the members of the household. The yard sloped from both sides towards the centre where was a well which supplied drinking and cooking water for this and the adjoining house. In the summer of 1874, there were several cases of fever in the neighbourhood. Mr. Y. was occupied during the day in one of the large hotels of the city. He had not used the water from the well for two or more weeks before illness began, as he noticed that it had a bad taste. The weather had been very dry, and there was less water in the well than usual. About June 24th, he began to complain of lassitude, headache, and occasional diarrhœa; these symptoms continued during the last week in June and first week of July, with “occasional” fever.

I saw him first on July 9th. He had been out in the morning, and complained of debility, headache, and constipation. There was undoubted fever, and the abdomen was distended. He was advised to go to bed, and a sedative and febrifuge mixture ordered.

July 10. The patient went out to-day against advice, but returned in a few hours complaining as before. The bowels at this date had not been moved for four days, and a mild purgative was prescribed.

11th. Tympanites, a few rose spots, and diarrhœa—four liquid stools—slight delirium, and tongue furred. Morning temperature 101.3° .

12th. Two liquid movements. Evening temperature 103.3° ; pulse 110.

13th. Two fluid movements, delirium; pulse, morning 90, evening 112; temperature, A. M. 102.5° , P. M. 103.2° .

14th. Pulse, A. M. 88, P. M. 110; temperature, A. M. 101.8° , P. M. 102.6° .

15th. Condition unchanged; less delirium; mind dull; pulse, A. M. 90, P. M. 100; temperature, A. M. 101.5° , P. M. 102.4° .

16th. Pulse, A. M. 86, P. M. 106; temperature, A. M. 101.3° , P. M. 102.5° .

17th. No delirium; two loose discharges; rose spots still visible, tympanites; pulse, A. M. 78, P. M. 90; temperature, A. M. 99.8° , P. M. 101.2° .

18th. Mind clearer; general improvement; pulse, A. M. 78, P. M. 90; temperature, A. M. 99.9° , P. M. 100.6° .

19th. Appetite; bowels less frequently disturbed; discharges less fluid; no rose spots, tympanites less; pulse, A. M. 79, P. M. 80; temperature, A. M. 98.8°, P. M. 99.2°.

20th. On this the eighteenth day of the attack, counting July 9th as the seventh day, defervescence was completed.¹ Pulse, A. M. 78, P. M. 78; temperature, A. M. 98.6°, P. M. 98.6°.

Convalescence was rapid, and emaciation not great. The highest evening rise of temperature was on the ninth day of disease, and was 103.3°. The mean evening height during the fastigium was 102.3°. The first marked morning remission to 99.8° was on the fifteenth day of the attack.

CASE II. G. Y., æt. 12, son of former patient, living in the same house; kept out of the room during the greater part of his father's illness. On July 16th my attention was attracted to him. He complained of loss of appetite, and had fever, which his mother had noticed for several nights. Thermometric observations were not taken until the 20th. He went to bed on the 16th, and did not get up until the fourth of August. During the attack the symptoms were lassitude, slight headache, constipation, with very little tympanites, and considerable emaciation. There was no delirium; no rose spots, or other characteristic symptoms of typhoid fever. His evening temperatures from the 20th to the 31st inclusive (with the exception of the 22d and 28th, when no observation was recorded), being a period of twelve days, were as follows: 102.8°; 102.5°; 102°; 103.8°; 103.6; 102°; 103.2°; 102.8°; 102.4°; 100.8°; mean of high temperatures before remission 102.78°. The descent from the 31st was rapid, and on the evening of the 2d of August 98.4° was reached. The morning remissions were slight until the 28th, when 100.8° was registered. On August 1st there was no fever in the morning. Counting from the 16th (the first day when fever was observed), as his first day, the whole duration of the attack to the 2d August was 18 days. It may have been a few days longer than this. Convalescence was slow. During nearly the whole period of his illness he had a great desire for food, and never was without appetite, although the fever was at a high point for nearly two weeks.

CASE III. S. Y., æt. 9, brother of the last patient, remained in the house for the greater part of the time during his father's and brother's illness.

August 5. Fifteen days after beginning of his father's convalescence, and three days after the disappearance of his brother's fever, the second son was observed to be unwell; he had no appetite, with some fever in the evening. The minds of those in the house were so much occupied with the boy just entering upon convalescence, that no symptoms indicative of the prodromal period in this third patient were noticed. In the following table will be found a record of his temperature and pulse, with the progress of the case. He went to bed on August 6th, and observations were begun on the following day.

¹ If we assume July 9th to be the first day of the disease and the previous symptoms to have been prodromal, the whole duration of the attack was eleven days.

Date.	Day of disease.	Temperature.		Pulse.		
		M.	E.	M.	E.	
Aug. 7	2	.....	102.5	...	105	Languor; debility; headache; pains in
" 8	3	101.9	.....	...	...	limbs; tongue white; constipation;
" 9	4	102	.....	114	...	slight tympanites; liquid food only.
" 10	5	.....	105	...	118	A teaspoonful of castor oil; no movem't.
" 11	6	102.8	.....	118	...	Oil repeated; one stool, consistent.
" 12	7	.....	103.9	...	120	Rose spots; no delirium; no enlarged
" 13	8	101.8	102.1	119	114	spleen; slight tympanites.
" 14	9	101.4	102.4	104	114	Oil again given; one movement.
" 15	10	101.3	102.4	104	108	Sleeps well every night without seda-
" 16	11	100.	101	108	104	For the first time no appetite. [tives.
" 17	12	99.8	101.2	100	104	No sensation of illness.
" 18	13	99.	101.4	97	116	
" 19	14	98.8	101.8	100	114	
" 20	15	98.9	102.1	104	112	Oil given with desired result.
" 21	16	98.9	101	112	100	
" 22	17	98.1	100	100	108	
" 23	18	97.9	100.1	98	98	Appetite.
" 24	19	97.9	100.8	98	104	
" 25	20	97.8	98.2	88	88	Tongue losing fur; appetite great.
" 26	21	97.2	98.4	86	88	Emaciation great.
" 27 }	22	97.2	98.4	86	88	{ No delay in convalescence after this date.
" 28 }	23					

An opportunity was offered in this case of following the symptoms from the beginning to the end. With the exception of the rose spots and fever, the patient did not present any of the characteristic features of the disease. There were no nervous symptoms whatever except slight headache in the beginning; the bowels were only moved when oil was given. He did not feel ill, and was only kept in bed and on liquid diet by reiteration of injunctions and careful watching. The fever wave presents the characteristic evening exacerbations and morning remissions with the average duration of typhoid fever. The stage of ascent was finished on the fifth day; when the evening temperature reached 105°, its highest point. The fastigium was of the descending variety from the beginning; it ended on the 18th, lasting one week; mean of maximum temperatures 102.2°. Defervescence also occupied one week; normal morning and evening temperatures occurring first on the 25th. The whole duration of the fever was nineteen days. The study of the variations of the temperature pointed out the nature of the disease, and the necessity of rest and liquid diet in securing a steady and uninterrupted progress towards recovery.

CASE IV. Mrs. J., æt. 43, light mulatto, residing on the next block to the previous cases. In July, 1874, did not feel strong; went away from home into the country; returned in a few days. During the first week in August complained of headache, lassitude, loss of appetite, and diarrhœa. I saw her for the first time on August 7th. She had headache and was drowsy; the bowels had not been moved for two days, and there was tympanites. She remained in bed for twenty days from this date. The tongue was slightly furred throughout; the appetite was absent; the

bowels were persistently constipated, and only moved by a dose of castor oil every third night; the headache and drowsiness lasted one week; the tympanites was not marked after the end of the first week; there was no rose rash and no enlargement of the spleen; the fever lasted from the 7th until the 22d; the highest point reached was on the first day of observation, 102.8° ; including this, the average evening temperature was 101.06° ; average morning temperature 99° during the fastigium; defervescence began on the 14th and ended on the twenty-second. From the character of the symptoms previous to the 7th, and from the height of temperature on that day, the probabilities are that she was then in the fourth or fifth day of the attack; hence the whole duration of the illness was twenty or twenty-one days. The range of fever was lower than in either of the three preceding cases, and the symptoms still more negative, but the fever chart was positively diagnostic of typhoid fever.

CASE V. Mr. F., *æt.* 45; fever began August 8, 1873. Symptoms were slight, diarrhœa and tympanites in beginning; afterwards constipation; no nervous phenomena, no rose spots, no enlarged spleen; fever curve showed well defined periods of ascent; acme and descent lasting twenty-two days; the highest point was reached on the 20th and was 102.9° . The average evening rise was 102.1° during the height of the disease.

CASE VI. Mr. H., *æt.* 28. Prodromes for several days; went to bed August 8, 1872; complained of headache and debility; tongue furred; slight delirium during first few days; no tympanites; constipation; no rose spots; no enlarged spleen.

The fever passed through the successive periods of enteric fever from the 8th to the 29th. The mean evening rise during the fastigium was 101.8° ; the highest point was 102° .

CASE VII. Mr. McC., *æt.* 33. October 17, 1872, began to feel lassitude and indisposition to attend to business. October 27, fever observed; went to bed, and remained there until November 12, twenty days. The tongue was only slightly coated, appetite unimpaired, and bowels constipated. A few rose spots; no enlargement of spleen; characteristic temperature chart of typhoid fever. Mean evening temperature during period of full development 101.2° ; highest evening rise 101.8° on the fourth day of attack. Normal morning temperature reached fifteen days after going to bed; evening temperature normal three days later. The pulse was not over 100, averaging 90.

The following history exhibits a continued fever of much lower grade than any of the preceding:—

CASE VIII. Mrs. R., *æt.* 35; had a severe attack of enteric fever ten years ago; has been in moderately good health since. In the early part of August, 1874 (same period of first four cases) complained of debility, headache, pain in the back, loss of appetite, and thirst; bowels normal or constipated. I saw her two weeks later, on August 13. Her temperature was 99.6° , and pulse 98. From this date she remained in bed, with symptoms not very different from those above mentioned (only that constipation was persistent) for fifteen days. The evening high temperatures averaged 99.4° ; morning temperatures 98.97° . The highest temperature was 99.6° . The decline of the fever was gradual, and convalescence much prolonged, the patient being unable to attend to her household duties until two weeks after leaving bed.

If this be a case of typhoid fever (and there seems no reason to doubt it, as it differs only from the others in having a lower fever wave), it fittingly closes this series of mild cases, being itself the mildest of them all. The prevailing epidemic, the long prodromic stage, tedious convalescence, and typical fever curve, favour the opinion formed.

The recognition of the nature of the malady was facilitated in the foregoing eight cases by questions of locality, season, age, and contagion. Three were in the same house; all were in the same part of the city, on a plateau at some elevation above the river level; five occurred in the latter part of the summer and autumn of 1874; two in autumn of 1872; one in August, 1873. Five of the patients were under thirty-six years of age; the youngest was nine; the oldest forty-five. Contagion in the first three seems highly probable. A long prodromal period was traced in four; headache occurred in three; tympanites in three; diarrhœa in two; rose spots in three; emaciation and tedious convalescence in all. The approximate duration of the fever in days was as follows: 18, 18, 17, 20, 21, 15, 18. An estimation of the temperature, to show the mean of the high points during the period of greatest rise, gives the following series: 102.78° (Case II.); 102.3° (Case I.); 102.2° (Case III.); 102.1° (Case V.); 101.8° (Case VI.); 101.8° (Case IV.); 101.2° (Case VII.); 99.4° (Case VIII.). The relations of the stages of fever, the sequences of morning remissions and evening exacerbations, the final pictures of the temperature variations presented, like the children of a family, resemblances in form and feature which pointed to a common parentage.

No matter how such facts are interpreted, we must extend our views of typhoid fever beyond the area to which we limit it, and must include many continued fevers of sub-febrile course which are overlooked or classed under other heads. The prevailing opinion of the day finds its expression in the following limitation of the disease by Trousseau: "Every disease in which the temperature does not reach 103.10° F. by the evening of the fourth day is not typhoid fever." (*Clinique Médicale*, xv.—Dothiéntérie.) Such a definition cannot be absolute, and, although we may find it impossible to fix the minimum elevation of temperature in typhoid fever, yet it has a range below that which we suppose to be its lowest, where thermometric observation is alone able to determine the nature of the affection. At present, therefore, we find no answer to the question propounded, "What is the minimum state of symptom which warrants the diagnosis of typhoid fever?"

II. So far those forms only of typhoid fever have been considered in which the mildness of the attack is measured by a feeble manifestation of one or more of the symptoms of the disease. No marked distinction in length may exist between these and more severe cases.

The term "abortive typhoid" has been suggested by Lebert, to be applied to those cases which were first described by Griesinger, and since by

Wunderlich, Jürgensen, and others. An abortive typhoid, while it lasts a much shorter time, need not necessarily be mild. It usually is so from the start, and the fever of the second and third weeks (infiltration and ulceration, Peyer's patches) is much shortened, corresponding to the defervescent period of the third to fourth week in ordinary attacks. The percentage of the characteristic symptoms, according to Liebermeister, is less in the abortive forms—diarrhœa appearing in 41 per cent. (64 per cent. in all cases); roseola in 21 per cent. (76 per cent. in all cases); enlarged spleen in 71 per cent.

Murchison classes under the head of mild typhoid all those cases which end in the second or beginning of third week.

Jürgensen, of Tübingen, observed epidemics of abortive typhoid in Kiel, in 1865, '66, '68. His diagnosis was confirmed by post-mortem examination. In 74 out of 87 cases the onset was sudden, the temperature reached a high point, 104° F. early (in 34 hours), and not in the usual zigzag fashion. The fever lasted ten to sixteen days, and then declined rapidly, the normal temperature being reached in 24 to 72 hours. Swelling of the spleen occurred in 90 per cent., roseola in 75 per cent., diarrhœa in 16 per cent., and iliac tenderness in nearly all. Convalescence was very long, and relapses, from improper diet, frequent. The epidemics were in the autumn, from August to November, in persons from 15 to 30 years of age.

Jaccoud admits the existence of this form of enteric fever, and says it is characterized by its sudden onset, short duration, and rapid defervescence, which sometimes occurs as early as *the seventh day*. (*Int. Pathology*, vol. ii. pp. 184-5.)

If we admit the validity of these observations we must abandon all the ideas of fixity of type, with the trust in the slow development and defervescence as pathognomonic indications which the study of Wunderlich seemed to have established. Typhoid may present itself under various forms yet undiscovered, and may have many sub-varieties of the common type. And while, as yet, the minimum duration of the disease cannot be fixed at ten days or less, we are forced to form a new conception of its history, and look for its well-known symptoms in attacks which do not conform in length with our previous views.

The typhoid infective agent has a virulence which is by no means the same under all circumstances. The limits of variability are shown to be very wide. In the same house may exist cases which react in very different ways to an infection which seems to be the same. Different cities and countries probably present peculiarities, and it is for the future to determine in what these peculiarities consist. Our typhoid certainly differs from the European disease. Enlargement of the spleen has not, among us, the large percentage recorded abroad. Intestinal hemorrhage is very rare here, whereas it is said by Liebermeister to be very common. The

estimates by different writers of its frequency are as follows: Liebermeister, 1743 cases of typhoid fever, 127 cases of intestinal hemorrhage, 7.3 per cent. ; Griesinger, 600 patients, hemorrhage in 32, 5.3 per cent. ; Louis, 5.9 per cent. ; Flint, 73 cases, hemorrhage in 3, 4.1 per cent. There is a difference of over 3 per cent. between the frequency of intestinal hemorrhage in Basle and in New York. In Edinburgh lung symptoms are said by Bennett to be most prominent. In Germany abdominal symptoms are most common. In Washington, diarrhœa, while frequent in severe cases, is by no means as usual in the milder cases as constipation. Climate and locality have much to do in establishing a prevailing type. In Basle the cases which are not severe are of the mild continued form, whereas in Kiel (Jürgensen) the abortive forms make up the bulk of the imperfect cases. (Liebermeister, *loc. cit.*, p. 121.) Among us the abortive form has never been observed, but mild attacks of three to four weeks' duration are seen every year.

These few suggestions suffice to show that before a science of differential diagnosis in typhoid fever is complete, local peculiarities must be studied and laws established which shall have local not universal application.

The important lesson which is taught by the observation of mild and abortive cases is, that there has been in the past, owing to the want of thermometric art, a failure to see in obscure cases of illness accompanied with slight fever their true and specific nature.

That errors in diagnosis were of frequent occurrence all authors admit, and that to-day we ascribe to other causes than the real one the ill-health of many of our patients must be equally granted. The febriculæ, the simple continued fever, the "anomalous fevers," the obscure malarial diseases, should be and are now to a great extent ranged under the head of enteric fever. Murchison (*op. cit.*, p. 587) believes febricula to be properly abortive typhoid. He also thinks insidious and latent attacks of typhoid fever are often called simple continued fever, bilious attacks, and gastric fever. Niemeyer (*Art. Abdominal Typhus*) speaks of many cases of mild typhoid being miscalled mucous and gastric fever. The disease for which, in Washington, typhoid fever is commonly mistaken, is remittent fever. The prevailing idea of the wide prevalence of a malarial influence is the cause of the error in question, and in cases where the symptoms are negative, and where the thermometer is not used, the error is almost unavoidable. In such forms the morning diminution in the pulse's frequency, with an apparent cooling of the body temperature, is apt to deceive; but a pulse of seventy or eighty may be accompanied with slight remission in the fever. In the infant "a considerable proportion of the cases of so-called remittent fever are cases of typhoid fever." Rilliet, Taupin, West, and others have admitted the same. The "bilious fever" of this neighbourhood is generally modified typhoid.

The neglect to place those suffering from the inconvenience of a slight

illness, if that illness be typhoid fever, under conditions favourable to a restoration to health, results in the evolution of higher and more dangerous forms. Typhus ambulatorius may be suggested in this connection as showing, according to Jürgensen (Liebermeister, *op. cit.*, p. 141), how undeveloped typhoid fever may be aggravated and protracted in its course by errors of diet and an improper mode of life. In the mild cases individuals often go about until the disease has advanced to its second week, and even beyond, before an observation of the temperature reveals the height of the fever. If we could get control always of our patient, as we sometimes do, during the prodromal stage, and guard carefully all those of a certain age, in certain seasons, and in times of epidemic influence, who complain of languor, headache, and disturbed digestion, we might meet less frequently with severe and fatal cases.

The idea once firmly fixed that a large number of those infected with the typhoid poison do not present the typical features of the disease, will inevitably lead to such a course of action as will greatly moderate or greatly shorten the successive phases of the malady.

ART. V.—*On the Connection between Staphyloma Posticum and Astigmatism.* By WM. THOMSON, M.D., Lecturer on Diseases of the Eye and Ear at Jefferson Medical College, Surgeon to the Wills Ophthalmic Hospital, Philadelphia.

No apology will be needed for the discussion of the question of sclerotic-choroiditis posterior, since all ophthalmic surgeons regard it as second to no other in awakening all their solicitude as to the future of the patient, whose eye-ground presents to an ophthalmoscopic examination the characteristic brilliant white crescent at the margin of the optic nerve. Not only the future with its possible increasing myopia, vitreous opacities, posterior polar cataracts, retinal degenerations and separations, and consequent loss of sight, is to be considered, but the immediate needs of the case, the question of hygiene, the use of proper glasses, the loss perhaps of educational facilities, the antiphlogistic treatment, including local abstraction of blood, counter-irritation, prolonged use of atropia, or even mercurial impressions, all of which are regarded as essential by writers of the highest authority to combat a choroiditis, and which if unsuccessfully applied are properly regarded by the public as evidences of want of skill; and finally even the choice of a profession, trade, or other occupation, must all be duly weighed in assuming the responsibility of treating such cases.

For an extended discussion of the subject, with a full description of the appearances, I must refer the general reader to the well-known text-books,

and I would suggest that the lithographic plates of Jaeger, Liebreich, or those in the works of Wells or Stelwag, in which the appearances of the eye-ground are well depicted, should be examined in connection with these remarks. A very brief statement of the views at present entertained would seem to be needed as an introduction to the clinical facts now presented.

When one examines with the ophthalmoscope the fundus of a case of high myopia, the optic disk is seen perhaps elongated vertically, whilst horizontally there extends from its outer side a brilliant white crescent which may vary in size from a narrow arc on the side of the disk, to a zone surrounding it, but having a wide elliptical extension generally towards the macula, equal in breadth to two or more times the diameter of the disk. Its colour is brilliant white, from the reflection of light from the sclerotic surface, exposed by the disappearance of the pigment of the choroid; its margin is generally sharply defined and bounded by a line of pigment, small, irregular masses of which are sometimes seen scattered on its face. The large choroid vessels are very clearly seen against the white ground, and the vessels of the retina pass over it in clear view, but the small vessels of the choroid which give the fundus its rosy hue, and the pigment cells of the stroma, and the hexagonal cells also, seem to have disappeared.

In advanced cases complications are found consisting of numerous white spots scattered thickly over the whole eye-ground, and rude changes may be found in the macula lutea itself, which, Donders states, are almost constant after a certain period of life, and which are due to circumscribed atrophies of the choroid; or the vitreous humour may be found fluid, and rendered cloudy by numerous shreds or flakes of gray material visible to the observer. In more advanced cases these shreds are accompanied by a basket-like opacity at the posterior surface of the lens, or finally the retina may be seen partially detached from the choroid. In the uncomplicated cases the patient is usually highly near-sighted, has a low acuity of vision, finds it very difficult to do any near work with the eyes, with or without glasses, on account of pain and fatigue, complains of a dazzling sensation with his glasses on, has been using the eyes without them for reading, and has frequently insufficiency of the internal recti-muscles and perhaps a divergent squint, and chronic hyperæmia of the conjunctiva and tarsal borders of the lids.

The difficulties are already great enough, and if the observer believes, with Jaeger, that the appearances at the disk are congenital, he may content himself by alleviating the symptoms; but Donders has pointed out that if inherited, such eye-grounds should be found evenly distributed throughout the different classes of society, and not confined to those who use the eyes for near work; and Cohn, by examining the eyes of ten thousand children, establishes the law that myopia is infrequent in the infant schools, but that its percentage of cases, and its degree of defect, increase as child-

ren are subjected to the educational strain of prolonged reading of perhaps badly printed books in deficient illumination, until from a percentage of 1.5 in the village infant school it has increased in the university to 66 per cent. This appears to complete the chain, and to convince the surgeon that the case in hand was at one time, perhaps, free from myopia, that this has been induced first in a slight degree, and that by the gradual elongation of the eyeball, the degree has increased until the myopia may be when examined perhaps a $\frac{1}{2}$ or more, there may be a posterior sclerotic-choroiditis with some irritation and impairment of sight, but with the acceptance of these views, stares him in the face, the possibility of the further progression of the myopia, and the appearance in their turn, as time advances, of the various complications that clinical observation presents to us all, and perhaps the entire loss of useful vision from cataract, vitreous disorganization, hemorrhage into the eye, lesions at the macula or separation of the retina, at a time of life when the responsibilities of a family may be most urgent, and when many years of unhappiness may yet remain to the unfortunate patient.

As to the prognosis the books tell us to be "guarded," and as to treatment nothing at all adequate to the clear-cut peril is to be found. Careful attention to hygiene, rearrangement of school-rooms and furniture, avoidance of a constrained and stooping position, the use of tinted glasses, blisters occasionally behind the ears, derivatives acting upon the skin and kidneys, the use of bichloride of mercury and iodide of potassium internally, the absolute rest of the eyes and this enforced by daily use of atropia, and the douche, aided by occasional leeching of the temples, are the means proposed. As to glasses to remedy the myopia there is less clearness, Wells stating only that if patients use spectacles for reading, etc., they must be cautioned against holding the book too near to avoid a strain on the accommodation; their use for distance is not discussed in a hygienic manner, and there is a natural dread of giving advice which may be injurious.

In the translation of Donders' classical work, by the Sydenham Society, on page 353 will be found a full description and discussion of this condition, from which I will briefly extract some of his conclusions.

From examinations and recorded facts, with drawings of 700 myopic eyes of all ages and both sexes, he believes that "myopia and staphyloma posticum have become nearly synonymous;" the changes are atrophy of the choroid at the outside of the optic nerve entrance, change of form of the nerve surface, a straightened course of the retinal vessels, diffuse atrophies of the choroid elsewhere, and morbid changes at the yellow spot. They are depicted as crescents, with the concave side towards the nerve, or annular in form, or elliptical, the long axes extending in various directions, but generally towards the fovea, which, however, is *seldom reached*, but may present independent lesions. He confirms also the observation of

Liebreich, that the "nerve-surface has, in extensive atrophy, the greatest diameter in a direction perpendicular to the axis of the atrophy." He regards as belonging to the essence of myopia the choroiditis disseminata, recognized by its white spots, with irregular pigment deposits scattered over the eye-ground; the hemorrhages into the retina, and its detachment by blood or serum; the fluid vitreous, with movable flakes, and the partial opacity of the lens.

From the records of 1400 eyes he deduces that slight crescents are found in young persons, with low degrees of myopia, and that the size of the crescent increases with the age, and with the degree of the myopia, so that the largest staphylomata are found in old persons, who have the high degrees, and that they are preceded by a condition of hyperæmia. He gives Græfe's authority, who found in ten cases of high myopia, crescents in nine, and Jaeger's, who arrived at similar results, and then announces that we may go further and believe that "myopia depends upon a condition in which the development of atrophy is included." Nevertheless, he has seen atrophy without myopia, and twice in certain degrees of hypermetropia.

He also points out the extreme difficulty of the use of the erect method of ophthalmoscopic examination in high degrees of myopia, and states that his cases were observed by the inverted method only—a fact which may, perhaps, account for the presentation of these present views.

He offers a theory for the production of the crescent based upon the anatomy of the optic nerve, which is too profound and too extended for an abstract, to which the reader is referred, and believes that it begins as a separation of the outer from the inner sheath of the nerve, but offers no cause to account for this departure, beyond a "predisposition" to assume the elongation of axis characteristic of myopia. As to the elongation of the optic disk, perpendicular to the axis of the crescent, he says: "I can give no satisfactory explanation."

Are these the changes of inflammation of the choroid? Græfe assumed this position at first, but sought in vain for its characteristic changes in an eye which he was able to examine anatomically. Even with great attenuation of both sclerotic and choroid coats, Coccius, after examining the retina in many cases, found it also free from any serious change, beyond the loss here and there of some rods and cones. Donders concludes that there is a congenital predisposition to staphyloma, that it is developed with symptoms of irritation only in the moderate degrees, but that in advanced years, and in the high degrees, inflammation always occurs, but that we fail to find its products from the fact that they also have undergone an atrophic degeneration. He believes that its causes are a continued accommodation for near objects, a strong convergence, and a stooping position.

Giraud-Teulon has offered the following as his answer to the riddle;

In myopics, accommodation and convergence are employed to a greater degree than with emmetropics, and in undue convergence the external rectus and superior oblique in antagonizing the contraction of the internal rectus, have their points of insertion carried forward, and "in proportion to the degree of convergence, the globe, by reason of its shape, tends to stretch the oblique, an action that must manifestly be attended by an equal reaction on their part, thus increasing internal pressure. The simple physiological movement of convergence in a horizontal plane necessarily produces, therefore, a tendency to increased intra-ocular tension."

Two opposing theories for the production of staphyloma posticum are now held; the one that they are congenital; the other that the disappearance of the choroid and the sclerotic exposure, result from atrophy induced by inflammation, the latter being caused by a prolonged use of the ciliary muscle in preserving sustained accommodation, in overwork at a near point, causing a cramp or spasm of the ciliary, and a hyperæmia and inflammation of the choroid. Upon this theory myopia is regarded as not wholly due to an elongation of the ball, but to a contraction of the ciliary muscle and spasm of the accommodation, which may be successfully overcome by prolonged use of atropia; this has been proposed as a method of treatment, and several observers have published results which indicate that the myopia is thus reduced in degree, although their examinations are not confirmed by the ophthalmoscope in the erect method, and they fail to submit evidence that the reduction of the refraction is any greater than it would be from the use of atropia in normal or hypermetropic eyes, where its influence in this direction has already been pointed out by Donders.

Neither does it seem possible to believe that there can be any very severe strain upon the accommodation in myopia, since we know that many myopes read without glasses at their natural far points, and thus disturb their relative accommodation and induce insufficiency of the interni and divergent strabismus, by the efforts they must continually make to converge sufficiently to obtain binocular vision, whilst avoiding the increase of the refraction by any accommodation. Were cramp or prolonged use of the accommodation a sufficient cause for elongation of the eyeball and staphylomata, we would never see a case of high hypermetropia without such lesions, since uncorrected hypermetropes exist in the constant need for vigorous accommodation, and give themselves severe asthenopic symptoms, nervous and vascular, in their efforts to secure sharp definition, not only for near objects but also for distant ones, and do present evidences of cramp in the difference between latent and manifest hypermetropia. Moreover, Schnabel has tested the existence of spasm in two hundred and ten eyes, in eighty-nine the result after paralysis of accommodation by atropia being verified by the ophthalmoscope, and he has failed to dis-

cover spasm in a sufficient number of cases to satisfy him that it can be the influential factor in the elongation of the eyeball.

He allows that Dobrowolski found 69 cases of spasm in 110 examinations, and Hoesch 46 in 67. Schiess reports 101 cases, and of these 51 in which the myopia depended upon cramp, glasses being used for the examination, and no report being made of the refraction by the ophthalmoscope; whilst in regard to the elongation of the disk at right angles to the long axis of the crescent, he says: "Ce c'est encore a savoir."

A valuable paper by Dr. Derby upon this subject may be found in the *Proceedings of the American Ophthalmological Society* for 1874.

Schubel concludes that there are two forms of crescents: 1. The congenital, small in size, found in eyes of all varieties of refraction, where the choroid proper and epithelial layer are both absent, and analogous to choroidal coloboma. 2. The acquired, due to staphyloma posticum, resulting from a stretching of the choroid and its consequent atrophy.

With all these various theories, there remain a few pregnant clinical facts, viz., that myopia, with all its complications, is found in every walk of life, not only among the student-class, but also among the tillers of the soil, who have no daily need for enforced eye-strain; furthermore, we know but too well, from examination of school children, that this natural defect can be greatly increased by prolonged near work, and that its control is one of the most important duties of the ophthalmic surgeon.

My early experiences in treating high degrees of myopia were guided by the preceding views of Donders and Graefe; and the observation of the latter, that in 1000 cases of "amblyopia" he found 420 with staphyloma, induced me to rest satisfied with a low acuity of vision in my corrections, whilst I was led by Donders' view, that prolonged accommodation would increase the myopia, to give only a partial correction, and put the punctum remotum about 12 or 16 inches from the patient. Such glasses, whilst increasing the patient's comfort, yet failed frequently to relieve the severe asthenopia, and this led, in young people with vigorous power of accommodation, to the use of a fuller correction, to harmonize better the relation between accommodation and convergence; but the persistency of discomfort and the increase of the myopia in a few cases of children kept sufficiently long under observation, pointed to the inadequacy of hygienic precautions and spherical glasses, and led to a careful search for complicating astigmatism, the correction of which has proved sufficient to arrest the progressive myopia in the cases alluded to, and to remove in many others an asthenopia which prevented any useful work; glasses as high as $-\frac{1}{2}$, $-\frac{1}{10}$ cy. being needed, and giving entire relief, with $V = \frac{20}{xxx}$ in one case, $-\frac{1}{2}$ and $-\frac{1}{10}$ cy. in a second, and $-\frac{1}{1\frac{3}{4}}$ $-\frac{1}{10}$ cy. in a third, and these persons have been entirely comfortable for more than two years.

So frequent is astigmatism as a complication, that I seldom see high myopia without it, and can give from my notes but a few cases; but they teach that when there is no astigmatism spherical glasses correct, give high acuity of vision, and enable the persons to use their eyes without fatigue. Such eyes finally rarely present staphylomata. For example, Miss M., with $-\frac{1}{8}$, $V = \frac{1}{1}$, no lesions whatever in either fundus.

Mr. R., age 50, distinguished lawyer, used glasses which gave p. r. of 20 inches for years; has no complaint to make, except that he does not see well for distance; found his myopia $\frac{1}{4}$, $V = \frac{15}{xx}$ with $-\frac{1}{4}$; eye-grounds both normal in every respect.

Mr. H., lawyer, uses eyes constantly. My. $-\frac{1}{4\frac{1}{2}}$, $V. \frac{15}{xiii}$. No staphyloma. No astigmatism.

Miss A., age 25, $-\frac{1}{8}$ gives $V = \frac{15}{xvi}$. No astigmatism; no asthenopia; no lesions in the eye-ground.

I infer from such cases that they are simply congenital, and that the degree of M. has never been any less, and that an absence of astigmatism enables them to enjoy a high acuity of vision with absence of choroidal changes, on the constant use of spherical glasses for *near work*. Nor is it more rare to find myopia without astigmatism than to see an optic nerve entrance which is perfectly normal in shape, and free from the evidence of strain or drag. Undoubtedly cases of myopia, high in degree, do present choroidal atrophies and changes at the disk or macula, when no glasses have been used for reading and other near work, and I have seen within a week a case in which M. was $\frac{1}{4}$, no glasses had been used in near work, but the macula in each eye presented circumscribed lesions with a central scotoma corresponding to them in the centre of each field. It is difficult in such a case to exclude astigmatism, and I have notes of several where the myopia was greater than $\frac{1}{3}$, with large crescents, but where the V. was too low to admit of accurate diagnosis by glasses, and where the ophthalmoscope also failed on account of the extreme difficulty of the erect method, combined with the fact that the refraction at the macula is frequently very much greater than at the disk.

I have before me now the clinical records of 100 cases of crescent at the optic nerve, which divide themselves into 80 cases of myopic and 20 of hypermetropic refraction, all complicated with astigmatism, in which, after a correction, and when viewed through it, the line of the drag or crescentic atrophy of the choroid has had a constant fixed relation to the axis of the required cylinder glass.

In our trial frames, looking at them from behind, the scale of the divided circle begins at the left-hand side, and increases towards the right, 1° being at the horizontal line to the left, and 180° being at a corre-

sponding point on the right side. Upon placing such trial frames on a patient's nose, it will be observed that this is reversed when we stand in front, and that 1° begins at our right, and increases towards the left, and that therefore 1° will be found at the patient's outer canthus for the left eye, and inner canthus for the right eye, and that the degrees will increase towards our left. In the diagnosis of these cases I have noted every sign of staphyloma upon this theory, and have depicted in note books the changes at the optic disk as they appear, by the erect method, to have a relation to the various degrees on our trial frames, when viewed through the correcting glasses.

The disk of an emmetropic eye, free from disease, will be found nearly round, its surface a plane having the same refraction as the surrounding fundus, and its retinal vessels should leave its *porus opticus* and proceed on their courses with a free and natural movement; when a physiological cup exists it is nearly round, and its borders are usually skirted by a minute vessel above and below.

In strong contrast with this are the disks of the patient D. ; a man 30 years of age who had been using his eyes without glasses for hours each day at a near point, and who spent the evenings of the past winter in learning to draw ; his symptoms were asthenopia, conjunctival hyperæmia, and partial loss of sight of right eye— $V = \frac{10}{cc}$; with the left he placed a

book at ten inches, as his p. r., and could read only Snellen No. 3. Each disk was converted into a narrow ellipse with its long axis in the R. at 10° , and in the L. at 165° ; and there extended downwards, in each eye, a large white staphyloma or crescent, the long axis of which was equal to three times the diameter of the narrow disk, and its direction at right angles to the long axis of the disk. The *porus opticus* was a narrow slit from which the vessels emerged as though the upper half of the disk had been drawn downwards ; the upper vessels being lost to view at the sharp upper edge of the excavation, whilst the lower seemed to come from beneath an overhanging projection, which prevented the main artery and veins from being seen at the bottom of the cup. The upper half of the disk, between the edge of the excavation and its border, was a flat plane with a full pink colour ; whilst the lower half seemed lost in the crescent, and its lower edge was marked by a faint blue tint. The refraction of the vessels in a line with the long axis of the disk was E., whilst of those in the long axis of the crescent it was M. $\frac{1}{16}$, they had lost all freedom in their courses, and were straightened as though submitted to tension in this direction.

In the Rt. there appeared numerous small round white atrophies of the choroid, limited to that part of the eye-ground in a line with the direction of the crescent, and extending over a space pyramidal in shape, which would have its base at the ora serrata, and its apex at the disk.

From the appearances near the fovea in Rt. and the low V. obtained by proper correction, the man was treated for some weeks with hydrarg. bichlorid. and potas. iodide, and when last seen he had been using—

Rt. — $\frac{1}{16}$ cy. ax. 100° $V = \frac{1}{4}$, having increased from $\frac{1}{2}$.

Lt. — $\frac{1}{16}$ cy. ax. 75° $V = \frac{1}{2}$; the asthenopia had disappeared.

With one emmetropic meridian this man, without glasses, under the combined convergence and accommodation needed for near work, had a p. r. of 10 in., and could only read No. 3 S. The situation of the disseminated atrophies suggested that the staphyloma and impaired nutrition of the choroid might, perhaps, be due to the same cause.

This series consists of eyes with myopia and astigmatism, in which the long axis or width of the crescents *coincided* with the axis of the cylinder, and most of these presented high degrees of M.; for example:—

$$\begin{array}{l} \text{E.} -\frac{1}{3\frac{1}{2}} \bigcirc -\frac{1}{3\frac{1}{2}} \text{ cy. ax. } 60^\circ \text{ R. } V = \frac{15}{\text{XX}} \\ \quad -\frac{1}{4} \bigcirc -\frac{1}{3\frac{1}{2}} \quad \quad \quad \text{ " } 150^\circ \text{ Lt. } \end{array}$$

$$\begin{array}{l} \text{Mr. P.,} \quad \text{Rt.} -\frac{1}{3\frac{1}{2}} \bigcirc -\frac{1}{1\frac{1}{2}} \text{ cy. ax. } 115^\circ \quad V \frac{10}{\text{XL}} \\ \text{age 64.} \quad \text{Lt.} -\frac{1}{3\frac{1}{2}} \bigcirc -\frac{1}{1\frac{1}{2}} \quad \quad \quad \text{ " } 90^\circ \end{array}$$

$$\begin{array}{l} \text{Mr. B.,} \quad \text{R.} \quad \quad \quad 90^\circ \quad 10 \\ \quad \quad \quad -\frac{1}{6} \text{ S. } \bigcirc -\frac{1}{6} \text{ cy. ax. } \quad \quad \frac{\text{XXX}}{\text{XXX}} \\ \text{age 54.} \quad \text{L.} \quad \quad \quad 90^\circ \end{array}$$

$$\begin{array}{l} \text{Miss H.} \quad \text{R.} -\frac{1}{2} \bigcirc -\frac{1}{2\frac{1}{2}} \text{ cy.} \quad \quad \quad \frac{20}{\text{XXV}} \\ \quad \quad \quad \quad \quad \quad \quad \text{ax. } 180^\circ \quad V \frac{20}{\text{XXX}} \\ \quad \quad \quad \text{L.} -\frac{1}{2\frac{1}{2}} \quad -\frac{1}{1\frac{1}{2}} \text{ cy.} \end{array}$$

$$\text{M. S.} -\frac{1}{8} \bigcirc -\frac{1}{1\frac{1}{2}} \text{ cy ax. } 90^\circ.$$

$$\text{Mrs. G.} -\frac{1}{4} \bigcirc -\frac{1}{2\frac{1}{2}} \text{ cy. ax. } 15^\circ.$$

With spherical glasses there was very low acuity of vision and obstinate asthenopia, which yielded to the proper correction. Several cases presented lesions near the fovea and vitreous opacities, in persons over 50 years of age.

In another series of cases the axis of cylinder had to be placed at right angles to the line of drag at the disk or width of crescent, as in the eye of Miss S., 15 years old, who was two years ago provided with $-\frac{1}{9}$ sp. which gave with each eye $V = \frac{20}{\text{XXX}}$, but failed to relieve an asthenopia which prevented her from reading or sewing. A recent examination found her with $\frac{1}{9}$ in use, and V reduced to $\frac{20}{\text{LX}}$, and the myopia increased. Each optic disk was an ellipse, with its long axis in Rt. at 160° , in Lt. 30° , and extending downwards at right angles to these directions, there was a large rounded crescent; the physiological cup was a slit overhung by the upper margin of the disk, from beneath which the large retinal vessels escaped. After careful correction she required—

$$\begin{array}{l} \text{Rt.} -\frac{1}{7} \bigcirc -\frac{1}{3\frac{1}{2}} \text{ cy. ax. } 160^\circ \\ \text{Lt.} -\frac{1}{7} \bigcirc -\frac{1}{3\frac{1}{2}} \text{ cy. ax. } 30^\circ \end{array} \text{ giving } V \frac{16}{\text{XX}} \frac{16}{\text{XX}}$$

and she was when last seen able to use her eyes with comfort.

Mrs. J., then 25, was corrected five years ago by the following—

$$\begin{aligned}\text{Rt.} & - \frac{1}{5} \bigcirc - \frac{1}{10} \text{ cy. ax. } 1^\circ \\ \text{Lt.} & - \frac{1}{10} \bigcirc - \frac{1}{10} \text{ cy. ax. } 1^\circ.\end{aligned}$$

She had a history of myopia and asthenopia dating from childhood; had been educated by being read to by a companion, and had been told by surgeons of repute, who were misled by the appearances of her disk by the inverted method, that there was partial atrophy of the nerve, and that total blindness might ensue at any time. Since the use of proper glasses she suffers no fatigue in prolonged near work, the eyes are free from irritation, there has been no change in the refraction, and her satisfaction is as lively as it was at first. Each disk presents a white crescent extending upward, with the dragged appearance of the vessels, which escape from beneath the lower half of the disk—details which can be readily studied by the erect method through her correction.

In the next five cases there are staphylomata in one eye only, combined with astigmatism, the other being Em., or myopic only, and free from crescents.

$$\text{Miss P. Rt.} - \frac{1}{4} V \frac{18}{XX}, \text{ normal fundus.}$$

$$\text{Lt.} - \frac{1}{7} - \bigcirc \frac{1}{16} \text{ ax. } 40^\circ, \text{ crescent down and out.}$$

$$\text{Mrs. D. Rt.} - \frac{1}{4} \bigcirc - \frac{1}{12} \text{ cy. ax. } 10^\circ V \frac{20}{XXX}, \text{ crescent downwards.}$$

$$\text{Lt.} - \text{Em. } V \frac{1}{7}, \text{ normal fundus.}$$

$$\text{Mrs. V. Rt.} - \text{Em. } V \frac{1}{1}, \text{ normal fundus.}$$

$$\text{Lt.} - \text{Sphero-cylind ax. } 100^\circ, \text{ crescent upward.}$$

$$\text{Mr. F. Rt.} - \frac{1}{10} \bigcirc - \frac{1}{20} \text{ cy. ax. } 165^\circ, V \frac{20}{XXV}, \text{ crescent down and out-ward, in direction of } 75^\circ.$$

$$\text{Lt.} - \text{Em. } V \frac{1}{1}, \text{ normal fundus.}$$

$$\text{Mr. B. Rt.} - \frac{1}{7} \bigcirc - \frac{1}{16} \text{ cy. ax. } 75^\circ, \text{ crescent up in line with axis of cy. } V = \frac{20}{XXV}.$$

$$\text{Lt.} - \frac{1}{4\frac{1}{2}} V = \frac{20}{XXV}, \text{ no crescent.}$$

These cases suggest strongly that astigmatism, and not myopia, is co-incident with staphyloma.

That crescents exist without myopia is shown by a series of 20 eyes, in which the refraction was hypermetropic, two of which will be given for illustration.

Miss L., age 50; sight always imperfect; uses a strong convex ($+\frac{1}{3}$) as a hand glass for near vision. One meridian Em., the other hypermetropic. Acuity of vision brought in each eye to $\frac{20}{XXX}$ by $+\frac{1}{8}$ cy. ax. 90° ; without correction $V = \frac{10}{C} = \frac{1}{10}$; each eye presents a large white cres-

cent extending down from lower margin of disk, coinciding with axis of cylinder.

Mrs. M., age 48. $V \frac{\text{Rt. } 10}{\text{Lt. LXXX}} = \frac{1}{8}$, with constant headache. The disks are precisely like those above described, and the formula required for correction was—

$$\frac{\text{Rt.}}{\text{Lt.}} + \frac{1}{8} \text{ S. } \odot + \frac{1}{10} \text{ cy. ax. } \frac{100^\circ}{90^\circ} V = \frac{20}{\text{XL}}.$$

Mr. D. Asthenopia, under atropia $V = \frac{10}{c} = \frac{1}{10}$.

$$\text{Rt. } + \frac{1}{10} \text{ cy. ax. } 120^\circ V \frac{20}{\text{XXX}}.$$

$$\text{Lt. } + \frac{1}{30} \odot + \frac{1}{12} \text{ cy. ax. } 120^\circ V \frac{20}{\text{XXX}}.$$

There is a crescent at each disk, its width coinciding with axis of cy. in the left down and out, in right down and in, and *away from fovea*.

The exceptions, as in the following marked cases of astigmatism, where there were no staphylomata, are most interesting, and suggest that binocular vision, which was absent, is to be considered as essential in the problem.

Miss L. A. and hy. = $\frac{1}{12}$ in each eye; convergent squint with absence of crescents.

Mr. S. Rt. Amblyopic.

$$\text{Lt. } + \frac{1}{8} \odot + \frac{1}{10} \text{ cy. ax. } 160, \text{ no crescent.}$$

Mr. P. $\left. \begin{array}{l} \text{Rt. } - \frac{1}{24} \odot - \frac{1}{4} \text{ cy.} \\ \text{Lt. } - \frac{1}{14} \text{ cy.} \end{array} \right\} \text{ ax. } 180 V \frac{15}{\text{XX}}, \text{ divergent squint, no } \left[\begin{array}{l} \text{crescent.} \\ \end{array} \right]$

Mrs. A. Divergent squint, with hy. and astigm., free from crescents.

Dr. W., Rt. $- \frac{1}{11} \text{ cy. ax. } 110^\circ V \frac{20}{\text{XX}}$, Lt. $- \frac{1}{20} \text{ cy. ax. } 180^\circ V \frac{20}{\text{XX}}$, has been a hard student, but presents disks free from crescents, reads entirely with left eye.

In all these various cases the extent of the changes at the disk was in proportion to the degree of optical defect, a low degree of A. being marked by a displacement of the excavation and the vessels, with a narrow crescent involving, perhaps, only the hexagonal cells; whilst high degrees were combined with large white crescents, straightened vessels, an elliptical shape of the disk, and a dragged condition of that part of the disk where it passed into the staphyloma, where the refraction by the erect method was greater than the remainder.

Having endeavoured to point out the clinical fact that there is a coincidence between the direction of a staphyloma posticum and the astigmatic meridian of the cornea, I approach the attempt at explanation with extreme caution, and trust that the importance of the subject may induce others to aid in its entire solution.

These crescents are either congenital or induced. If the former is accepted, we must rest content with the practical value of these observations in aiding the diagnosis and correction of astigmatism; we will then also believe that congenital crescents are the companions of congenital asymmetrical corneæ, and that we need feel no alarm on their account when we meet them in patients, say of twenty years of age, in whom they have existed since birth; but if we fear that they may increase, however, and be attended by other morbid changes well known to the observer, it becomes our duty to search for the causes which can hasten these sad results with as much care as if we believed that they could induce them. The weight of authority at present is in favour of ascribing the changes which attend progressive myopia, in which staphyloma is most common, to a prolonged strain of the accommodation in overwork, and hence its lesions are regarded as thus induced, if not in all, at least in those cases which have a congenital predisposition. Helmholtz and Donders have established that, when the eye is accommodated for a near point, the curvature of both surfaces of the lens is increased, and that this is caused by the action of the ciliary muscle, animated by the 3d pair of nerves, which they believe relaxes the zone of Zinn, and permits the lens, by an inherent elasticity, to increase its convexity, and hence its refraction. The iris was believed to exert a pressure upon the periphery of the lens, and to be an important factor, until by a clinical observation Graefe proved that accommodation remained after its entire removal. A serious objection to the prevalent view that the lens gains its convexity, upon the relaxation of the zonula, by its inherent elasticity, is that the lens must be, therefore, held in check, as it were, by the ciliary; hence it becomes impossible for us to believe, as we certainly do, that the adjustment of an eye for its p. r. is the state of entire muscular rest, since, under this reasoning, the use of distant sight would be a state of tension in which the lens would be repressed, but ready to spring into action on the relaxation of the zone. The authority of these two immortal observers renders it difficult to discuss their conclusions; but Helmholtz says, in closing his discussion of the subject, that whilst he considers this opinion the most reasonable, it has but the character of probability; and they would be the first to hail with welcome any facts which future clinical observation might offer.

Prof. Iwanof, in Stricker's Manual of Histology (vol. iii. p. 299), gives three admirable representations of the ciliary region of the eye in man, with description of the parts. The choroid, he says,

"is firmly attached to the sclerotic in two places: posteriorly, at the point of entrance of the optic nerve, where its inner layers are continuous with a ring that embraces the nerve, and from which fine fibres are given off which penetrate the nerve itself; and anteriorly, at the point of transition of the sclerotic into the cornea (annular tendon of the ciliary muscle)."

The ciliary muscle is imbedded in the anterior portion of the choroid, and consists in its greatest thickness of smooth muscular fibres, having

their attachments through the annular tendon to the tissue of the cornea, and arranged in a radiating or longitudinal direction, the fasciculi of which can be traced for a considerable distance backward in the choroid; the anterior and internal portion of the muscle is composed of circular fibres, the so-called annular muscle of Müller. He says, further, that the relative development of the meridional and circular fibres is subject to variation, and depends upon the length of the optic axis; that in hypermetropes the annular portion is largely developed, whilst in myopes these fibres are very feeble, and the muscle consists chiefly of radiating fasciculi; and he gives drawings of the microscopic appearances of sections through the ciliary regions of an emmetropic, a hypermetropic, and a myopic eye, which sustain his views.

If we grant these anatomical facts we can construct a theory for the relation between staphyloma and the asymmetry of the cornea, which produces astigmatism, and gain moreover a further insight into the much disputed point of the accommodation. Henke has already proposed the theory that both positive and negative accommodation exist, and are caused by the contraction of the circular and radiating fibres, but he failed to offer proofs sufficient to convince Helmholtz, who pronounces against his hypothesis. Yet it seems requisite that we should possess some muscular power competent to overmaster the positive accommodation, and enable us promptly to adjust our eyes from near to far points. Could it be shown that the radiating fibres have attachments at the cornea and optic nerve entrance through the choroid, and thus resemble the string of a bow, whilst the circular fibres by their contraction could exert a tension similar to that used by the hand in discharging an arrow, it would be evident that such forces could exert a direct antagonistic influence upon the lens through their attachments by the zonula to its capsule.

The demonstration of an independent nerve supply for the circular and radiating fibres would render this theory yet more certain, and I will give evidence hereafter, to suggest that the radiating fibres, like those of the iris, are under the control of the sympathetic system. To show the influence of such power of negative accommodation in causing structural changes, let us suppose a case of myopia, say $\frac{1}{8}$ in each eye, and that the person endeavours to read without glasses; it would be possible to do so at 8'' by suppressing all positive accommodation, and preserving binocular vision by the proper convergence. Should any + accommodation be used, the refraction of the eyes would be increased, convergence would likewise have to be made for a point nearer than 8 inches, and there would come an effort on the part of the patient to suppress the circular fibres, and put into strong tension the radiating fibres of the muscle which would then exert an injurious tension upon the choroid.

When, however, we add astigmatism, the following chain of incidents is possible. Take a case of an emmetropic meridian, for lines at 1° , and a myopic one of $\frac{1}{16}$ for 90° ; the patient is hence able to see horizontal lines

at infinity, but has a p. proximum for vertical ones of $16''$; when he regards, of two cross lines, the one at 1° , placing it at $16''$ away, he must put on + accommodation of $\frac{1}{16}$, and by this he puts the p. r. of his myopic meridian at $8''$, and should he then crave to see the line at 90° he would be obliged either to bring it to $8''$, or he would relax the + accommodation, and view it with his myopic meridian, with suppressed accommodation; combine two such eyes, in binocular vision, and the theory of *relative* accommodation would enter into the problem, and make their muscular movements still more intricate. Furthermore, in reading the acuity is diminished by the astigmatism, and the patient brings ordinary type much nearer than an emmetrope would do to increase its size, and the above supposed astigmatic would not be able to read a larger type than Sn. 3 at $10''$ or $12''$, and he would probably be found holding his page even within that point. We would then have the emmetropic meridians increased by relative accommodation, and myopic ones of yet higher refraction, engaged in the hopeless task, by constant struggles between the circular and radiating ciliary fibres, of transmitting to the retina the perfect images of objects, the vertical and horizontal parts of which would be, for such eyes, in a state of perspective. Grant the hypertrophy from constant use of the radiating fibres described by Iwanof in myopia, the two eyes cramped in a high convergence with its inseparable + accommodation, to preserve binocular near vision, and we can conceive that any persistent efforts at negative accommodation to reduce the refraction of the most defective meridians, might by tension on the choroid produce the signs of a dragged or displaced condition of the disk, or impair its nutrition so as to cause the atrophies of its stroma which present themselves in choroiditis disseminata; and finally that the line of displacement might have a connection with the unchanging astigmatic meridian of the cornea.

If we assume that the radiating fibres are under the nervous influence of the sympathetic, we can not only comprehend the distortion of the eye-ground, but the extreme asthenopia that is found in astigmatism. We have also a better conception of the influence of mydriatics and myotics.

Donders teaches that atropia dilates the pupil by paralysis of the circular fibres of the iris, animated by the oculomotorius, and by a partial stimulation of the radiating ones. If this influence is a paralyzing one upon the third pair, ptosis and strabismus should result from large doses. Again, in central or other paralysis of the third pair, we find accommodation annulled and the pupil partly dilated, but capable of further dilatation with atropia, showing its power of stimulation upon the nerve of the sympathetic. The muscular fibre cannot be the tissue affected, or both radiating and circular fibres would suffer alike.

I have carefully observed a few cases of pathological myosis, dependent upon central nervous disease, with the hope that I might find with the

contracted pupil a spasm of accommodation and apparent myopia, which would convince me that the ciliary muscle participated in the lesion of the sympathetic, which had caused the paresis of the dilators of the iris, but all my cases were old men, and there was also atrophy of the optic nerve, slight or severe enough to prevent any examination as to the condition of the accommodation. Such inquiry can only be made in clinical cases, and we fortunately have one recently reported by Dr. Reuling, of Baltimore, in the last number of *Arch. of Ophthalmology and Otology*, where myosis was caused by a gunshot wound of the cervical portion of the sympathetic. The pupil was small, and would contract no more with Calabar bean;

$V = \frac{20}{CC}$, but with $-\frac{1}{18}$ $V = \frac{20}{XX}$; a spasm of the accommodation was proved

by the influence of atropia, which dilated the pupil, and reduced the refraction to $-\frac{1}{42}$, where it remained, affording us a numerical estimate of the muscular tonus dependent upon integrity of the sympathetic, which might be even higher, since, from the character of the lesion, some paresis might have yet remained after treatment.

Binocular vision seems to be a condition requisite for this kind of staphyloma, since my note-books contain numerous cases where astigmatism was found in high degrees, myopic or hypermetropic, without lesions at the disk, when one eye only had been habitually used.

Most of the cases reported have sought advice for symptoms of asthenopia, complicated with persistent forms of conjunctivitis and blepharitis, which have always hitherto seemed out of proportion to the optical defects. The vigilant, unceasing muscular adjustments that may be needed to permit people with even low degrees of astigmatism to sew or read, may be sufficient to cause such symptoms of irritation.

We are also provided with a trustworthy test for astigmatism in the observation of any signs of drag, even slight, that can be seen at the disk, and I constantly use these hints to determine not only its presence, but its meridian. How important these studies are, in a hygienic point of view, may be perceived when we consider the hundreds of thousands of dollars spent in school furniture since attention has been called to increasing optical defects in school children, and when we consider that no change of chair or desk can be of any service to an asymmetric cornea, in comparison with the cylindrical glass which will harmonize the refraction, and permit the muscles of accommodation and convergence to do their work with ease, as in emmetropia.

ART. VI.—*On Cold as a Cause of Acute Inflammation.* By A. F. A. KING, M.D., of Washington, D. C., Prof. of Obstetrics and Diseases of Women in the National Medical College, and in the University of Vermont; one of the attending physicians to Providence Hospital, Washington, D. C.

WHEN, after being chilled by exposure to cold, an individual suffers an immediate attack of acute congestion or inflammation (no matter of what organ), it is easy to infer, as is commonly done, that the "taking cold" produced the inflammatory attack. Thus, it is universally admitted that "*cold is an exciting cause of acute inflammation.*" In part, this is true; but it is only half the truth. Of two persons similarly exposed, one shall suffer nothing. There must therefore be present in the individual who is attacked some pre-existing condition, which entails upon him the *liability* to inflammation after exposure. And, further, since of several persons who thus suffer from acute inflammation, different *organs* may be attacked in each, it is evident there exists in the organs inflamed some pre-existing condition creating the liability to inflammation, and which does not exist in the organs that escape. Thus we are at once brought to acknowledge that cold, *per se*, is *not* a cause of acute inflammation; and it therefore becomes of great importance to ascertain what are the pre-existing conditions that create the liability to inflammation on exposure, and, in the absence of which, the inflammatory attack would not have occurred.

To define these (some of them) is the purpose of the present paper. And first let it be premised that I do not intend here to deal with such intense degrees of cold as produce frost-bite and the fatal torpor experienced by Arctic voyagers, etc. It ought, further, to be noted, also, that the frequency with which inflammation occurs is not so much in accord with a great *degree* of cold, as it is with *sudden depressions* of temperature, such as occur quite frequently during our winter season, or with sudden cooling of the body, during warmer seasons, from exposure to rain, and draughts of air, or from change of clothing, etc.

Of the bodily conditions that predispose to inflammatory attacks under such circumstances, we may mention:

First. Rapid Physiological Evolution. Children and young animals, though in quite a normal state, are peculiarly liable to congestion and inflammation on being exposed to cold, and hence with scrupulous care nature surrounds the young and growing progeny of all wild animals with the conditions that promote warmth; and the mother, in the case of the human species, takes the same precaution with her infant. That the condition of developmental growth is here the potent factor in predisposing to inflammation after exposure, is proved by the fact that the organs

whose rate of development is at the time most rapid have the predisposition most marked. Thus, the child is more liable to inflammatory affections of the digestive and respiratory systems, than it is to those of the reproductive organs. On the other hand, later in life, as at puberty, the liability to inflammation of the reproductive system, on exposure, becomes very manifest. The buds of plants that have not yet entered upon their vernal growth withstand the frost, but those that, owing perhaps to a warm southern exposure, have begun to develop earlier, are killed by the first cold night. Eggs that have not begun embryonic development can withstand a degree of cold that would be fatal to the embryo after the developmental process has been set in action by the warmth of incubation. The increased mortality among young animals and infants during unusually cold seasons, especially if the winter has been prolonged to the breeding season, and accompanied with sudden vasculations of temperature, is well known. And there is no other way of accounting for this augmented mortality than that congestion and inflammation of some of the internal organs has occurred, and which, in the human species at least, we know to be the case.

Second. Inflammation following cold is peculiarly liable to occur in organisms that are undergoing *pathological evolution*, and especially in the particular organs which are the seat of more decided or rapid pathological development.

Before presenting evidence in support of this proposition, it is necessary to define what I mean by the term "*pathological evolution*." It will at once be surmised that the expression is meant to imply something analogous with *physiological evolution*. Such exactly is my meaning. As the normal development of a young organism is designed to secure the formation of certain structures, or organs, whose function, both in kind and degree, shall be such as to maintain a perfect adaptation between the organism and its natural environing conditions; so there also occur in the body other structural changes designed to secure a conservative modification both of structure and function, so that the organs thus modified may be adapted to other and *unnatural* environing conditions to which the body has been subjected. These changes of structure I call processes of "*pathological evolution*." The causes that lead to them are the changes of environment just referred to. They are analogous with physiological developmental processes not only in the particular just mentioned, of securing adaptation, but also in being *gradual* in their formation; *latent* as regards symptoms; subservient in their growth to a given *type*; and in being disastrously interfered with in their evolution by the same disturbing causes that interrupt physiological growth, and prominent among which latter must be mentioned *exposure of the body to sudden depressions of temperature*, as I may now proceed to demonstrate.

With persons in whom some chronic structural disease is *known* to

exist, such as of the lungs, kidneys, stomach, etc., it is a common enough event for them to suffer acute inflammation of the affected organ, and to be finally "cut off" by such an attack, after exposure to cold. We constantly caution such persons to wrap up warm, and "take care of themselves," well knowing that if chilled, they are liable to congestion and inflammation of the chronically diseased organ. The frequency with which acute catarrhs and pneumonias thus terminate old cases of pulmonary disease is familiar enough; and so with other diseases. Chronic "invalids," for so we are wont to call such individuals, exhibit the same instinctive dread of cold as is observed in children and young animals, and the same liability to be easily chilled.

I have now to add that *unknown* structural diseases, viz: *latent, typical, gradual, pathological, evolutionary* changes, entail the same liability to inflammation on exposure, and in the absence of which (if we except other predisposing causes of inflammation presently to be mentioned), the inflammatory action would not occur. If this be true, it is of vast importance, inasmuch as the heretofore acknowledged frequent occurrence of acute inflammation in a previously perfectly healthy organ would be proved to be an error of no small magnitude. Furthermore, in the absence of the more usual evidence of chronic structural disease, the occurrence of inflammation would itself constitute a partial proof that such latent structural disease did really exist. There can be no doubt that many of the structural changes discovered after death, in organs that have just previously been acutely inflamed, are not at all due to the acute inflammation, but on the contrary preceded it and constituted the local condition predisposing to the inflammatory attack; this, too, notwithstanding the patient may have enjoyed good health, and have been free from any unpleasant symptoms directing attention to the altered organ. All this is easy enough of explanation when we recognize the fact that such designedly conservative processes of "pathological evolution," when pursuing their typical course undisturbed, are often completely *latent*. In no set of organs, perhaps, has the mistake of attributing post-mortem appearances to inflammation that ought not to be so attributed, been more prevalent than in those of respiration; and our entire pathology of phthisis and its kindred affections has been warped from the truth by this unfortunate error.

It is now very well known, however, since the researches of Handfield Jones, and others, that thickening and adhesions of the pleura, connective-tissue—hyperplasia, and consequent induration of the lung, and fibrous growths round the walls of the bronchi (peri-bronchitis), all of which, when found after death following acute inflammation, were thought at one time to be products of inflammation, are not always to be so accounted for, but very frequently occur slowly and latently without being suspected

either by the patient or physician, and quite independent of inflammatory action.

True,¹ it is frequently alleged that a patient, whose lungs were examined yesterday and presented no physical sign of latent or other disease, will to-morrow, perhaps, on being exposed to cold, suffer from acute pneumonia or pleurisy. Thus, it is believed, the inflammation attacked a perfectly healthy organ. From this I demur. If the individual had been perfectly well before exposure, why should he afterward be ill, while his companions escape; and if his lung had been previously sound, why should it now be inflamed, while other organs in the body have escaped inflammation? Evidently there was something wrong about the organ before the patient was exposed.

To say that physical examination revealed no signs of structural change before exposure is not sufficient. *It is impossible by any yet known means of physical examination to detect the beginning of disease in the thoracic organs; more likely it is only the very prodigious structural changes that are thus recognized.* To illustrate, let us suppose a case of chronic interstitial pneumonia, of incipient "fibroid phthisis," so-called, or "cirrhosis," a disease of very common occurrence, though formerly not so considered. This is acknowledged to be a very insidious affection, gradual in its development, and often quite latent. It consists chiefly in obliteration of the minute capillary vessels covering the respiratory surface of the lung, and in their substitution by hyperplased connective tissue; in time all the normal structures of the affected part are supplanted in a greater or less degree by the same sort of fibroid growth. Can we detect the incipient or secondary stages of the affection, or, indeed, any other than what are in reality its later stages? I think not. Excluding adventitious sounds, râles, which would hardly be present in the beginning, certainly not in the absence of catarrh, there remain chiefly changes in the respiratory murmur and in the percussion resonance from which we should have to judge as to the existence or non-existence of disease. Experts in auscultation and percussion do not usually recognize more than three or four well-defined shades or degrees of modification in the normal resonance and normal murmur, although, practically, we all appreciate a certain number of intermediate or sub-grades of modification. Thus the percussion resonance is said to be "clear," "dull," or "flat," and the respiratory murmur "increased," "normal," "feeble," or "absent." If we could reduce the different grades of deviation in the resonance and respiratory murmur to an exact scale, it is questionable whether ever so acute and well-educated an ear could appreciate more than ten well-defined degrees of modification between health and the most exaggerated physical abnormality. That is to say, if the lung sounds in one individual were just normal, and those of another abnormal, in some degree less than one-tenth

the abnormality in the latter case would scarcely be recognized with any certainty.

Returning now to our case of chronic interstitial pneumonia, let us suppose it has progressed to a sufficient degree to have obliterated and substituted by proliferated connective tissue *one square foot* of the rete of capillaries spread out over the respiratory surface; but this not in one spot, but diffused with tolerable equality over one lung. To have accomplished this thousands of capillaries and hundreds of air-vesicles must have been obliterated. Yet we cannot suppose that any so limited a change would be appreciable to the ear, for since, as the physiologist tells us, the normal respiratory surface in a full grown lung, if spread out, would cover seven hundred square feet (1400 *for both* lungs) we should have to recognize that the normal sound had been modified in a *one-seven-hundredth degree*. Even if the one square foot of obliterated surface were confined to one-seventh of the entire lung (the apex), instead of being diffused through the whole organ, we should still have to appreciate that the sound at the apex had swerved from the normal standard only in a *one-hundredth degree*. If, instead of one square foot, the extent of surface had been reduced by disease *ten square feet*, provided the abnormality were moderately diffused, it would still demand that we should recognize a departure from the normal sounds in a *one-seventieth degree* before the structural change could be diagnosed, yet here millions of capillaries and thousands of air-vesicles have been obliterated.

Nay, even if *fifty square feet* of the respiratory surface had been supplanted by connective tissue, provided the change were diffused, it is questionable whether the ear of every auscultator could recognize this prodigious abnormality, for it would require the recognition of a deviation from the normal sound only in a *one-fourteenth degree*.

Furthermore, when we reflect that the chest-walls in different localities and in different subjects vary from half an inch to an inch and a half or more in thickness, and that there exist in individuals that we acknowledge to be in perfect health certain variations in the size and shape of the thoracic cavity, and certain individual peculiarities in the size and functional capacity of the thoracic organs, it may justly be questioned whether these variations would not elicit more decided difference in the physical signs than could be produced by such limited organic changes as those just referred to as belonging to incipient chronic pneumonitis.

Of course, the same remarks apply with equal force to all other slowly-developing thoracic diseases.

Again, admitting a patient, whose lungs on recent physical examination have been pronounced healthy, to die shortly afterward with an acute pneumonia, and allowing that, on post-mortem examination, no evidence of previous structural disease of older date can be discovered, *there yet remains the doubt whether such previous structural change did not really*

exist; for, aside from its being obscured by the products of acute inflammation, and even allowing the possibility of eliminating this source of obscurity, it is still questionable whether the limited modifications of structure, common to latent chronic pneumonia in its incipient and secondary stages, could be recognized by the ordinary *macroscopical* method of conducting necropsies; for it would require that modifications in the physical properties of the lung—in its colour, weight, density, elasticity, friability, etc. etc., from which examiners usually judge of abnormalities—should be recognized when present only in a *one-seven-hundredth*, *one-hundredth*, *one-seventieth*, or *one-fourteenth* degree, respectively, for the several grades of pathological modification just mentioned when speaking of physical signs. Without *microscopical* examination they would most likely escape detection.

For the present, therefore, it certainly remains insufficiently proved that acute inflammation, after exposure to cold, can occur without the inflamed organ having been previously the seat of structural disease, or rapid growth, except under certain circumstances that constitute additional predisposing causes of inflammation on exposure now to be mentioned.

Third. Organs, previously quite healthy, but which have been subjected to violent, or too greatly prolonged functional exercise, especially if unaccustomed to such functional exertion, are liable to congestion and acute inflammation when the individual is soon afterwards exposed to cold.

This proposition is too evident to require much argument in its support. Exaggerated functional use is itself often sufficient to produce inflammation, but the addition of exposure to cold greatly enhances the liability to the acute attack, or increases its severity when it would have occurred without exposure. Acute inflammations having this origin must be familiar to every practitioner. I would only here add that the exalted nutrition consequent upon exalted function is in many particulars analogous with that belonging to physiological and pathological evolution.

Fourth. Organs are more than usually liable to acute inflammation on exposure to cold, *when they have been subjected to mechanical or chemical injury.*

And here, again, are going on processes of repair, in some sense analogous with physiological development, pathological evolution, and the exalted nutrition that follows exaltation of function.

In conclusion, it must be remarked that two or more of the above-mentioned predisposing conditions may be combined, when, of course, the liability to inflammation will be increased. Moreover, the existence of one of them creates a diminished toleration of the rest. Organs, for instance, undergoing physiological development, or pathological evolution, are thereby rendered less tolerant of exaggerated functional exercise, and of chemical or mechanical injury, and *vice versâ*.

From what has now been said, and remembering that certain individuals withstand almost any amount of exposure without injury, it may, I think, fairly be admitted that cold, *per se*, does not produce acute inflammation.

ART. VII.—*Three Cases of Penetrating Gunshot Wound of the Thorax, with Perforation of Lungs; Recovery.* By B. J. D. IRWIN, M.D., Surgeon and Bvt. Colonel, U. S. Army.

DURING the early part of the war waged between the United States and the *soi-disant* Confederate States of America, much valuable material pertaining to the surgical and medical history of the contending armies was rendered unavailable or utterly lost to science through various adverse circumstances that surrounded the hastily improvised armies of both sections. Prominent among the causes that interfered with the keeping and preservation of perfect records of all cases of injury and disease was the pernicious system that permitted vast numbers of invalid officers and soldiers to straggle away, with or without authority, from under the control of the medical department of the army, to receive professional care outside of the established military hospitals. If the histories of the sick and wounded of the armies of the North and especially those of the South who were never treated at their individual homes, hotels, boarding-houses, and other private places, could have been preserved, collated, and added to the statistical tables embraced in the "Medical and Surgical History of the War of the Rebellion," the inestimable value of this peerless work would be rendered still more precious by presenting deductions fortified by an increased array of illustrative examples.

Some of the information rendered inaccessible through the vicious cause adverted to may be recovered from time to time by individual efforts. As an evidence of this the following instances of severe gunshot injuries are submitted, the cases not having been heretofore reported in detail in the official returns made at the time, owing to the fact that the patients were treated at their homes or in private quarters.

CASE I. *Penetrating gunshot wound of thorax and abdomen, perforation of the lungs, diaphragm, and liver; recovery.*—Lieutenant F. P. James, Third U. S. cavalry, aged 23, of active habits and good constitution, while in charge of a party of skirmishers October 11, 1863, at Collinsville, Tennessee, was wounded in the following manner: Lying in the prone position he cautiously raised his head and chest to enable him to peer over the crest of the ground in his front, and while so doing was wounded by a rifle ball. The missile struck the anterior aspect of the right side of the thorax at a point three inches outside of the sternum, passed inwards and downwards, in a line with the position of the body at the moment, between the fourth and fifth ribs, impinging on and shattering

the latter, thence downward, penetrating the pleura and grooving the lung, through the diaphragm into the right anterior hypochondriac region of the abdomen, plunging in its course through the anterior surface of the right lobe of the liver, again perforating the peritoneum to escape through the abdominal parietes at a point three inches above and some four inches outside of the umbilicus. The semi-curved attitude assumed by slightly elevating the head and upper part of the body from the horizontal position, at the moment the injury was inflicted, caused the trajet of the missile to pass in a line nearly parallel to the axis of the body in the erect position. The wound extended about ten inches from the point of entry to that of exit, and showed little deviation from the original line of flight of the missile. The patient received some temporary assistance on the field, after which he was sent by railway some thirty miles to Memphis, Tennessee, at which place I saw him at about 8 o'clock in the evening. Reaction had fully taken place, and, despite his rough usage, he was feeling cheerful and comparatively comfortable at the prospect of rest and treatment amongst his friends. Sputa freely mixed with frothy blood were expectorated during several days. The fragments of broken rib were sustained in position by a suitable bandage around the chest, and ice was continuously applied over the course of the injury. The strictest rest and freedom from excitement were enforced; opiates were given from time to time to aid in inducing sleep as occasion required. The injury to the liver was manifested by the position, direction, and depth of the perforation, and by the presence for several days of bile with the matter discharged from the lower wound. Notwithstanding the unusually severe nature of the injury and the dangers incident to wounds of the several important structures involved, the patient made an excellent recovery, and convalesced without an untoward symptom. The wound of exit healed up in the course of the fourth week, and on the 22d of December following he was sufficiently recovered to go on sick-leave and accompany his parents to their home in the vicinity of New York city.

The extraordinary nature of his injury, coupled with the fact that he was universally loved and esteemed by all who knew him, endowed the case with unusual interest and attracted much professional attention. The then Surgeon General of the army, Dr. W. A. Hammond, Surgeon John Moore, U. S. A., Medical Director of General Sherman's armies, and several other distinguished surgeons saw the case, and concurred with me as to the extent of the injury to the several structures involved.

This gallant young officer was accidentally and almost instantly killed August 4, 1864, near Cold Spring, N. Y., by being thrown violently from his horse, the animal having been tripped by the sluggish movements of a cow in her awkward efforts to rise from the highway as he rode rapidly past her. A sad termination to a young life full of bright hopes and promises of a brilliant future, especially after having successfully passed through the trying ordeal heretofore described.

CASE II. Penetrating wound of thorax, perforation of lung; recovery.
—Captain Samuel C. Erwin, Sixth Ohio Volunteer Infantry; aged about 30 years, while leading the skirmishers of his regiment, on the morning of May 30, 1862, into the enemy's works before Corinth, Mississippi, was shot with a musket or rifle ball through the right side of the chest. Being

in the advance with the commanding general, I rode to his assistance, and found him stretched on the ground on the inside of a field work from which his men had driven a part of the enemy's rear guard, but a few moments previously. He was suffering from severe shock, and his symptoms indicated an injury of the most severe character. Upon examination I found that a large bullet had struck him on the anterior aspect of the chest, passed between the intercostal space just below and a little to the inside of the mammary gland, penetrated the thoracic cavity, passed through the lung, and made its exit on the posterior aspect of the same side, a little below and outside the angle of the scapula. The course of the missile was backwards, downwards, and outwards. The injury was inflicted at close range as he entered the work, and the wounds of entry and exit indicated a large sized bullet, as the index finger was readily used in exploring the depth of the lesion. Frothy blood was coughed up every few minutes from the lungs. After the administration of temporary aid he was sent to the rear, and rallied sufficiently to warrant his removal by ambulance the next day to the steamboat landing, some thirty miles, from whence he was transferred on one of the improvised hospital steamers to his home in Cincinnati, Ohio, where he passed from under the control of the medical officers of the army to that of a civil practitioner. No details of his case ever reached me beyond the facts that he made a good recovery and rejoined for duty at Louisville, Kentucky, in September following. He subsequently became a major, but was killed, November 25, 1863, while in command of his gallant regiment at the battle of Missionary Ridge, Tennessee.

CASE III. Penetrating wound of thorax with perforation of lung and fracture of rib and scapula ; recovery.—Colonel Edward Hatch, Second Iowa Cavalry, aged about 28 years, while commanding a division of mounted troops was wounded in action on the 4th day of December, 1863, at Moscow, Tennessee. While repelling a charge from the enemy's cavalry he was struck by a conical bullet, shot from a trooper's carbine, at close range. The missile struck the chest on a level with and about an inch to the outside of the areola of the right mammary gland, penetrated the intercostal space, pleura, and lung, and made its exit through the back part of the thorax, fracturing the fifth rib, and escaped through the right scapula at a point equi-distant from its apex and borders. The scapula was elevated at the moment of injury—the arm being raised above the head when the wound was inflicted. He was attended by the division surgeon, Dr. John Nigolas, Sixth Illinois Cavalry, from the date of his injury until he was removed to Memphis, Tennessee, on the 24th of the same month, at which time he was still expectorating frothy blood, suffering from difficult respiration, and almost speechless. The impact of the ball was transmitted to the clavicle and thence to the nerves of the axillary plexus, producing partial paralysis of the muscles of the arm, rendering the limb nearly useless for more than a year thereafter. Fragments of necrosed bone were discharged from the posterior wound from time to time, until some fifty-three in all were removed up to October, 1864. The treatment consisted of perfect rest, cold-water dressings, anodynes, and a generous allowance of nourishing diet. His recovery progressed without any unfavourable symptoms, so that he had so far convalesced that he was permitted to go to his home on sick-leave January 18, 1864. He was able to return to duty on the first day of the following March, was appointed a general officer at the end of the succeeding month, and served continu-

ously in the field thereafter until the close of the war, at which time he was transferred to the regular service with his former rank. A short time ago, writing from his station on the Mexican frontier, he stated that he "felt no inconvenience from his old injury except the usual aches and pains from change of weather to which all wounds are subject, and, during hot weather, an occasional sense of suffocation as though there was not quite breathing room enough in the lungs." At that time "the finger could readily push before it the soft parts through the hole in the scapula, but the point of the injured rib could not be detected. The perforation in the scapula appears to be between an inch and an inch and a half in diameter and nearly round. The soft structures over the opening in the bone render it impracticable to determine with accuracy the exact condition of the osseous structures involved in the injury."

U. S. MILITARY ACADEMY, WEST POINT, NEW YORK.

ART. VIII.—*Dislocation of the external end of the Clavicle upon the Acromion of the Scapula.* By H. F. MONTGOMERY, M.D., one of the Attending Surgeons at the Rochester City Hospital, Rochester, New York.

A REFERENCE to the works of the most recent surgical writers, as those of Gross (*System of Surgery*, 5th ed., vol. ii. p. 46), Fergusson (*System of Practical Surgery*, 4th Am. ed., p. 203), Holmes (*System of Surgery*, 2d ed., vol. ii. p. 804), and Hamilton (*Practical Treatise on Fractures and Dislocations*, 4th ed., pp. 533-5), will show how entirely unsatisfactory has been the treatment of upward dislocations of the clavicle on the acromion in the hands of the ablest surgeons. Dr. Hamilton (p. 535) says that the maintenance of the bone in its socket for a length of time sufficient to insure a firm union of the broken tissues will be found always more difficult, and, in a great majority of cases, absolutely impossible. Nearly all surgeons who have written upon this subject have made the same observation. Failure to retain the reduced bone in its socket has been the rule, and apparently with few exceptions. The successful application of a new and simple method, and at the same time one readily tolerated by the patient, one in no way endangering the circulation through the limb, and one not requiring such prolonged duration as to ankylose the joints, is, therefore, of sufficient importance to be reported.

On the 28th of June, 1875, I was called to see James R., at No. 10 Ford Street, a blacksmith, aged 42 years, who when riding home after his day's work, standing in a wagon, was, by a suddenly accelerated motion, thrown backwards to the ground, striking on his right shoulder. I found the external end of the right clavicle dislocated from the acromion and resting upon it, making a distinct tumour. I took hold of the elbow, and, pushing upward and backward, while I carried the arm anteriorly across

the chest, at the same time placing my left hand upon the projecting bone, I reduced the dislocation with an audible snap. At the same time the deformity was removed and the patient was relieved from pain. I placed the right hand upon the left shoulder and directed a hood for the elbow, or sling such as is used in Fox's apparatus for fracture of the clavicle, to be made, and this I applied to the elbow and tied to a band across the back of the neck, hoping thus to retain the bones in place, but to my disappointment I found before I left the house that the dislocation was reproduced. I then endeavoured to keep the bone in its socket by passing a bandage firmly around the external end of the clavicle and the corresponding elbow; but this was found to be impossible, as the slope of the shoulder would not permit the bandage to be retained in place. I then concluded to try Prof. E. M. Moore's dressing for *fracture* of the clavicle, which I will describe to make my case complete.¹ Having again reduced the dislocation, and keeping it in place by pressure upon the top of the external end of the clavicle, I carried the arm backward and forced the elbow towards the left side across the back, pressing the arm against the side of the chest. Directing a bystander to hold the arm in this position and to keep up pressure upon the end of the clavicle, I called for a common cotton sheet, which I folded cravat-shape by placing the diagonal corners together and then folding these corners over and placing them on the middle of the base-line of the triangle, and again folding the sheet till the "cravat" is about four or five inches wide. The forearm of the injured side being bent to a right angle with the arm, the olecranon is placed upon the centre of the "cravat;" (the length of the cravat being at a right angle with the line of the arm and forearm). The end of the bandage which is next to the body of the patient is carried by a half-spiral turn up along the front of the arm, in front of and over the injured shoulder, and then down across the back to the axilla of the sound side, carried forwards under the sound arm, then upwards in front of the sound shoulder, and over it to the back. The other end of the "cravat," which is away from the body of the patient, is now carried around over the front of the elbow-joint and between the arm and the body to the back of the patient, then upwards across the back to the top of the sound shoulder, there meeting the other end of the "cravat." These ends were then drawn in opposite directions so as to make the bandage as tight as could be conveniently borne by the patient, and were fastened by sewing with a strong thread the lapped ends of the "cravat" to each other and to the portion of the "cravat" which crosses them on the back. The hand of the injured side was supported by a sling fastened around the neck, or which may be fastened to the bandage where it passes over the injured shoulder. After applying this dressing my patient was comfortable, and with no apparent displacement of the end of the clavicle. I visited him the next day; everything was satisfactory. I saw him every second day for ten days, and at each call tightened the dressing and examined the injured part to see that no displacement had taken place. For the second ten days I readjusted the dressing once in three or four days. On the 18th of July, the 21st day of the treatment, all dressings were removed and treatment discontinued, except that the patient was directed to carry his forearm in a sling for a week longer, and not to go to work. There was not the least deformity, nor did the bone once move

¹ The original paper of Dr. Moore on Fracture of the Clavicle may be found in the published Transactions of the New York State Medical Society, 1870.

from its place after the first application of this dressing. The point of discomfort to the patient during this treatment, is under the sound shoulder by the cutting of the folds of the bandage. This must be relieved by passing the finger between the bandage and the skin to change the points of pressure, and by slipping between the bandage and the folds of the axilla some soft cotton-wool.

To show that this is not an exceptional case, and that this form of dressing is to be relied upon, I will state that since this case has been under treatment I have had a conversation with Dr. Moore, in which I informed him of my adaptation of his fractured-clavicle dressing to the treatment of a case of dislocation of that bone from the acromion, and that it was eminently successful. In that conversation he informed me that he had previous to this time heard from five different surgeons, in widely different parts of the United States, of the same successful adaptation of this apparatus to dislocation of the external end of the clavicle. We thus have reports of six cases of success in this dislocation by the use of this method of treatment. It is to be hoped that other surgeons who have tried or may try this dressing, will report them, whether success or failure follow.

This method of treating this dislocation seems to be especially appropriate, and to fill all the requirements. It makes extension by increasing the distance between the sternum and the acromion. It relaxes that portion of the trapezius muscle which is attached to the external third of the clavicle, and which in the normal position of the shoulder tends to draw the external end of the clavicle upwards, and if dislocated would tend to displace it after its reduction. It puts upon the stretch that portion of the pectoralis major muscle which is attached to the clavicle, and thus draws the clavicle downwards, and aids in holding it in place after a reduction of its dislocation upwards on the acromion, and finally the fold of the bandage, which passes over the injured shoulder, presses firmly upon the outer end of the clavicle, and assists materially in holding it down in its place after its reduction.

ART. IX.—*Case of Chronic Laryngitis, serving to illustrate how the mucous membrane of the vocal cords may be in an objective morbid condition, though their physiological functions be restored.* By BEVERLEY ROBINSON, M.D., Surgeon to the Manhattan Eye and Ear Hospital (Department of the Throat), etc. (Read before the New York Laryngological Society.)

THE following case is given verbatim, as it was written out and handed to me by the patient himself:—

“D. S., thirty years of age. My home is in the West. Three years ago I came to New York city, and entered Union Theological Seminary,

and began a course of study for the ministry. Since then and for about seven years previous, I have been accustomed to more or less public speaking, and to a very great deal of public singing.

"During my vacation last summer (1874), I engaged in preaching for several months on the coast of Maine, and near the close of the summer had trouble with my voice. At first it was slight, but soon became quite annoying. It was not the ordinary hoarseness, but in speaking there would be a catch or break in my voice; and by this I mean that in the midst of a sentence I would lose a word, or rather fail to speak it, often-times making several attempts to pronounce it before I would succeed. This was especially marked in singing; here my voice would fail me in the midst of a measure, and I would be unable to complete it. But the quality of my voice was not affected, for my tones were as sure and strong as they had ever been.

"Soon another troublesome symptom developed itself. In the night I would be aroused from sleep with a spasm of the throat, and for some seconds would be unable to inflate my lungs, and in my attempts to do so would whoop like a person with the whooping-cough. In this condition I returned to the city, and in October (1875) put myself under the care of Dr. Beverley Robinson, who informed me that I had *chronic catarrhal laryngitis*. He began treatment with the sulphate of zinc in the form of spray, besides making various applications with the brush three times a week.

"For a month or six weeks there was little or no improvement, and during this period at times even ordinary conversation was difficult and painful. The treatment was continued, and varied from time to time, and presently there began to be improvement, and this continued up to three weeks ago (February 15), when all treatment was left off. Since then I have used my voice both in speaking and singing, and on several occasions put it to a severe test; and so far as I am able to judge, I am now (March 6, 1875) entirely well."

Remarks.—In the perusal of the above-detailed case, we shall notice two symptoms which occasionally present themselves in chronic inflammatory changes of the throat and air-passages. First, an inability at times during speech or singing to articulate certain words or give correct and complete tones in familiar measures of musical vocalization.

These phenomena were present at first temporarily, in a slight degree, and only after severe exercise of the vocal organ; at a subsequent period they showed themselves more frequently and persistently, and after a less prolonged effort of voice. Pain during ordinary conversation and spasmodic paroxysms at night were then superadded to the other evidences of trouble, pointing at once to its neurotic origin, as well as to its neuralgic character.

In the beginning and for several weeks general and local treatment, varied according to indications and accepted therapeutic action of particular drugs, remained without apparent results. Little by little, and after a considerable lapse of time, the spasmodic and painful symptoms disappeared, and gradually the voice acquired its normal force and flexibility, till to-day the patient is, so far as he is aware, completely cured.

In this connection, we are led almost naturally to consider two or three interesting facts having a direct relation with clinical study and experience.

The evening our patient was presented to the members of the New York Laryngological Society, the mucous membrane lining his vocal cords was still swollen and very red. In fact, there has been little change in the aspect of the larynx from the time when treatment was begun. And yet this same patient, who talks and sings to-day as well as he ever did, a few months since could only speak and sing in a very imperfect manner, and was awakened at night with painful spasms of the throat. What has taken place? Evidently the laryngeal mucous membrane has not been much changed by local applications. We are therefore obliged to take refuge in one of two hypotheses. 1. The muscles were morbidly affected. 2. The peripheral extremities of the pneumogastrics were diseased.

The painful and spasmodic phenomena at one time manifest, led us to the *nerves* as being the most probable source and seat of the disease, while the lack of co-ordinative power in the muscles was doubtless secondary to the nerve lesion.

Our astringent applications within the larynx, and the medicaments administered by the mouth, have doubtless, therefore, brought back a normal condition in nerve force, and the muscles again act synergetically and with a healthy degree of vigour. Want of vocal power is no infrequent occurrence, we are well aware, during and subsequent to catarrhal inflammations of the throat, either of an acute or chronic order. And for this loss of functional tonicities to show itself, it is not essential that the morbid processes should affect directly the mucous membrane lining the vocal organ itself. The inflammatory condition may only be obvious in the pharynx, and the larynx be apparently healthy. Such facts are explained by us in attributing the change of voice to abnormal circulation or diseased structure in or about the pneumogastric trunks.

In these cases, however, the tones of the voice become, as a rule, *pure*, as the parts adjacent to the larynx are favourably modified by local remedies. True it is, as Krishaber has demonstrated, that after catarrhal or other inflammations and changes of the vocal cords, the voice may remain hoarse and weak for a greater or less period of time, and the muscles be deficient in contractility, although their *visible* condition is healthy. In our case the mucous membrane of the glottis continues to be red and infiltrated, and the voice, singularly enough, is completely restored.

Happily our interpretation, which follows, is sufficient to give a rational explanation of a clinical state rigorously observed. All gynæcologists are familiar with facts of an analogous description. In nervous, hysterical, neuralgic women, do they not find that neuralgia affecting the lumbo-abdominal nerves frequently leads to congestive disorder of the interior

surface of the womb, and also to concomitant dysmenorrhœa, amenorrhœa, and metrorrhagia ?

Our patient was evidently labouring under nerve disorder of the throat from the time when his voice first began to fail him.

And now that the other manifestations of disordered innervation of functional or organic origin have disappeared, chronic thickening and congestion of the laryngeal mucous membrane still remain.

Will it disappear? In time it may. Having regard, however, to the nature of his profession and to the frequent calls made upon his voice, in fact to the *exaggerated* use of this organ which he is almost of necessity forced to make, we can hope for no *speedy* change in this respect unless he should guard relative or absolute repose from speaking aloud and vocalization.

There is still a point to which we claim attention. Modern physiology teaches us that the inner borders of the true cords alone furnish sonorous vibrations when air escapes from the lungs through the glottis during an expiratory movement.

It would, therefore, seem as if, and we believe it is thus generally understood, the vocal cords should be altogether normal in structure and appearance at this margin in order to make the act of perfect phonation possible. And, without doubt, this received opinion is usually the correct one, for the rule is that, whenever the interior lining of the glottis is even slightly congested, thickened, or in any manner altered, articulate speech is notably modified.

In our case, reported above, we have, nevertheless, an instance of a departure from healthy appearances, and yet the timbre and strength of the voice are to-day what they were when it was believed to be, and it probably was, in a normal state. Such an example must tend to establish the belief that integrity of the peripheral extremities of the laryngeal nerves and well adjusted action of the muscles are quite as important to the proper and accurate production of vocal sounds as the condition of the mucous membrane.

We find also this view corroborated by analogy with certain instruments of music. Take for example the violin or violoncello. Do we not know that although the cords may be somewhat worn by use, if the proper tension be given them, and the instrument is otherwise perfect, under the bow of a skilled artist the sweetest and purest notes can be produced ?

Now most facts in medical science are true with limitations. And this is certainly correct with respect to what we have endeavoured to prove. Manifestly we have no wish to affirm that the laryngeal mucous membrane, when morbidly affected to an *exaggerated* extent, will not occasion more or less complete aphonia.

Too frequent instances, with few or no exceptions, where growths or deep ulcerations upon the vocal cords have been the proximate and effi-

cient cause of similar trouble, are present to our mind for the truth of such a statement to be admitted. We would merely point out and lay stress upon this important clinical fact, not in our knowledge *sufficiently* made known to us by recognized authorities in like matter, *that good and strong if not perfect power of articulation in speech and singing, may exist though the vocal cords are congested and somewhat thickened.*

Finally, we offer the following proposition as being the expression of what in our estimation should be received as a *probable truth*, viz., actors, singers, public speakers, hawkers, etc., acquire, after a period of time more or less prolonged, a chronic inflammatory condition of the laryngeal mucous membrane, and especially of that portion of it lining the vocal cords, which, although treated actively and with the result of ridding them of painful or unpleasant symptoms, will continue to exist for a long while, and for this state, general or topical, remedial agents are inefficacious. Change of occupation would no doubt eventually bring about such effect in the nutrition of the parts as to restore them gradually to normal appearance as well as to normal function. Unless this indication be practically dealt with, it is probable that everything else in the way of treatment, prophylactic, hygienic, or poly-pharmaceutic, will in some cases be to no purpose.

37 WEST 35TH STREET, NEW YORK.

ART. X.—*On the Treatment of Venereal Disease by Salicylic Acid, with eight illustrative Cases.* By GEORGE HALSTED BOYLAND, M.D., Laureate of the Leipzig Medical Faculty.

A DECADE since no one would have thought of connecting the contagion of venereal disease with the presence of microzymes. The infections of gonorrhœa, phagedæna, balanitis, posthitis, etc., were indeed admitted to be the result of poisoning by means of some physico-chemical action or inflammatory process, spreading not only from one individual to another, but from part to part of the tissue in which it begins—as, for instance, the spread of gonorrhœa along the mucons surface affected by it. Modern investigators, however, have led us to the conviction¹ that this morbid agency is principally due to the existence of lower organisms. If we place upon the object glass of the microscope drops of the discharge from the urethra of patients passing through the different stages of gonorrhœa or gleet, we find that the micrococci increase or decrease in a direct proportion to the severity of the inflammation. In the burning, greenish-yellow, virulent secretion of acute gonorrhœa, their numbers literally obscure the view ;

¹ Medico-Chirurg. Trans., 1874, p. 285.

while in the milky, viscid, at times almost colourless discharge attending gleet, their presence though readily detected is very much less marked. As much may be claimed for phagedæna, balanitis, and posthitis. The fact being then established that these diseases are of parasitical origin and nature, the *rationale* of treatment is evidently the destruction of organic matter.

That salicylic acid annihilates both animal and vegetable parasites, as well as prevents their development, and may therefore be employed to advantage in the treatment of venereal disease, I have already briefly alluded to in a paper¹ giving the general history of salicylic acid as a disinfectant from the date of its discovery as such down to that in question. I have since applied it in the treatment of the diseases above mentioned. The results surpass all expectation.

The following record of cases is published in the hope that it may prove interesting to the medical profession, and that others may in their turn try this new and efficacious method of combating these terrible diseases.

CASE I. *Gonorrhœa complicated with non-indurated chancre.*—B. M., æt. 22, unmarried, clerk in a banking house; called upon me Nov. 14, 1874; had had gonorrhœa once before, in 1870, of which he had been cured before the supervention of gleet. I saw him on the sixth day after coition. There was no swelling of the prepuce or the meatus urinarius—but a slight discharge from the urethra. Five non-indurated chancres were present: one on the glans penis, two under the corona on the dorsal surface, and one each side of the frenulum. These last named had almost destroyed the tissue between the frenulum and the urethra, and were threatening to perforate into the fossa navicularis, having already eaten through behind the frenulum, which still remained intact like a bridge over this artificial canal through which a director could easily be passed. The chancres were thoroughly cauterized with the lapis infernalis, and dressed every four hours with charpie dipped in a solution of salicylic acid of 1:100 of water, the same being injected into the urethra thrice daily.

Nov. 30. Discharge from urethra almost entirely disappeared, chancres healthy, granulating sores.

Dec. 12. Chancres all healed save one. Discharge from urethra, patient informed me, had completely ceased since the 4th inst. Cauterized the remaining chancre and continued the use of salicylic acid both as a dressing and an injection.

20th. All traces of disease gone; patient discharged cured. I saw this man several weeks later, and there had been no return of disease.

CASE II. T. L., an officer suffering with acute gonorrhœa, painful erections, insomnia, etc. Glans swollen; lips of meatus purplish-red, and protruding. Treated him with injections of salicylic acid of 1:200, increasing gradually in strength as the inflammation subsided until a solution of 1:100 of water was attained. At the same time a mixture of salicylic acid was given per orem as follows: R. Acidi salicylici, grs. 18; tinct. anodyne simpl. gtts. 25; aquæ destil. oz. iij. M. S. A teaspoonful hourly.

¹ The *Lancet*, Nov. 28, 1874, p. 785.

Patient did not complain of any scalding sensation after injecting—such as is often experienced after using zinc. sulph., argent. nitr., or plumbi acetat., and was at the end of five weeks discharged cured.

CASE III. C. Y. This gentleman, engaged in active business, had four soft chancres. The salicylic acid treatment was employed after cauterization as above; cured.

CASE IV. S., aged 28, had previously been treated for syphilis; was at present afflicted with chronic serpiginous ulcer of the left leg. I employed the same remedy externally, with Zittmann's decoct. per orem, to which were added grs. 10 of salicylic acid at each dose. In one month the patient was able to resume work; cured.

CASE V. D. O. L., married gentleman, æt. 38, suffered with balanitis and posthitis, the glans penis and inner lining of the prepuce presented a turgid, reddish appearance; their surfaces were uneven and covered with a whitish-yellow slime; the epithelium of the glans was disturbed. A small compress moistened in a watery solution of salicylic acid of 1 : 100 was applied to the parts four times daily for fourteen days; cured. This balanoposthitis was undoubtedly produced by the chemical action of the menstrual fluid upon the tissues, as the patient confessed to me that he had had intercourse with his wife during her last menstruation.

CASE VI. N. A. C., carpenter, æt. 40, had a gleet of 18 months' standing. The endoscope was used and the interior of the urethra illuminated. Discovered a large purplish-red patch at the point of junction between the pars cavernosa with the pars prostatica. A concentrated solution of salicylic acid of 1 : 5 was injected through Guyon's graduated stem syringe. The instrument was passed down beyond the patch as recommended by Mr. Berkeley Hill,¹ in withdrawing slowly when the bulb of the stem reached the inflamed spot grs. 3 were injected. A weaker solution of the acid (1 : 100) was then ordered to be injected thrice daily for four days, when the concentrated solution was again used, followed as before by the weaker. This man was twenty-five days under treatment; cured.

CASE VII. Sarah P. H., æt. 19, unmarried, was suffering with vaginal gonorrhœa, contracted in the latter part of February. First saw her on the 2d of last April. Used vaginal injections and douches of salicylic acid—solution 1 : 100, containing two parts of the phosphate of soda; the acid was also administered per orem, as in Case II. April 30th. The patient was discharged cured.

CASE VIII. Charlotte M., æt. 22, unmarried, was afflicted with soft chancres complicated by a suppurating bubo on the right side just above Poupart's ligament. The chancres were cauterized with the lapis and dressed with salicylic acid as above. The bubo was freely incised (the bistoury being first moistened in a solution of the acid, the spray of which was at the same time thrown from the atomizer upon the surface of operation). The wound was then dressed antiseptically with a solution of salicylic acid of 1 : 100 of water; healed rapidly; cured.

The above notes, though fragmentary, show the value of salicylic acid as a remedial agent in the treatment of venereal disease; they must, however, be left to speak for themselves. Four of the cases had been subject to treatment before they came under my charge.

¹ Lancet, Feb. 13, 1875, p. 224.

ART. XI.—*Aneurism of Thoracic Aorta; extensive Hemorrhage some days before Death, without marked Symptoms.* By STUART ELDRIDGE, M.D., Surgeon to Yokohama General Hospital, Yokohama, Japan.

W. H. T., a man apparently in good general health but of exceedingly dissipated habits, consulted me March 15th on account of a chronic acne of nose and cheeks. I saw him again March 20th, and again March 28th, when the acne was better, and he declared himself as feeling in every way more comfortable than for some months, as pyrosis and constipation, from both of which he had been suffering, had disappeared under strychnia and hydrochloric acid which I had prescribed.

April 3. The patient called at my office, stating that for the past five days he had been suffering from dull pain in right hypochondrium and right shoulder, with return of constipation. I questioned him as to cough or pain in chest, neither of which was present. Temperature 98.6° Fahr. Respiration 19 per minute. Pulse natural in quantity and quality, and 75 per minute. Percussion over liver, to which I with difficulty persuaded him to accede, as he was in haste to attend to some business, showed that the organ was much enlarged both laterally and downward; the upper limit was not defined, as the patient would afford me no opportunity to examine it. Prescribed acid. nitromur. dil. $\mathfrak{m}90$; sp. æther. nitros. $\mathfrak{z}iij$; ext. taraxaci, $\mathfrak{z}iij$; tr. sennæ, $\mathfrak{z}iv$; aq. dest. ad $\mathfrak{z}vj$. Two tablespoonfuls thrice daily.

4th. Patient called at my office at half-past nine o'clock A.M., announcing himself as feeling much better; ordered dry cups over liver; to continue mixture. Patient returned home, attended to his business (that of a saloon-keeper) during the morning; at 2 o'clock ate a hearty tiffin, and was on his feet much of the time till nearly four P. M., when death took place as follows, this being the language of the only witness present:—

"I was present at the death of deceased, about twenty minutes past four o'clock, the afternoon of yesterday, April 4th. . . . Deceased waited upon me, after which he took some medicine, about half a wineglassful. Shortly after this he put his hand on his breast and sat down, asking me to sit before him. I did so, and was hardly seated when he fell off in a faint—dead."

Autopsy, 13 hours after death. Present, Doctors Hepburn, Wheeler, Dickinson, U.S.N., and Tripler. Abdomen opened. Liver enlarged and much displaced downward; enlargement estimated at one-third. Liver hard, elastic, and surface marbled with yellow; on section presented a nutmeg-like appearance; vessels compressed, and organ very anæmic.

Spleen enlarged and soft. Right kidney atrophied to one-half natural size, soft, and presenting three small subscapular abscesses of anterior surface. Left kidney double natural size, soft, and fatty. Stomach and bowels not examined.

On opening thorax a quart or more of clear serum escaped. On reflecting sternum, found the cavity of right pleura occupied by a firm and tenacious white fibrous clot about four pounds in weight; the right lung compressed to the size of a fist, and packed away in the costo-vertebral angle. This large white clot was of uniform consistence and color throughout, reminding one forcibly, save in size, of the ante-mortem clots so frequently found in the mouths of the cardiac outlets. On removing this clot from

the thorax, we found below it, in the right pleural cavity, about a gallon of fresh clots and liquid blood. No pleuritic adhesions on right side; on left side old but slight adhesions were found at two or three points. A careful dissection of mediastinal region was then made, which revealed a fusiform aneurism of thoracic aorta extending from immediately below the arch to within an inch of the diaphragm. The sac would have held nearly a pint. The aneurism lay upon the anterior aspect of the bodies of the vertebræ, slight erosion of which had taken place. Rupture of the sac had occurred longitudinally for about three-quarters of an inch at right margin of contact with vertebræ. The aneurismal wall was very thin throughout, more especially in that portion which was in contact with the vertebræ, and no laminated fibrin was found either in the sac or pleural cavity.

There are several points of interest in this case :—

1. That so great and sudden a hemorrhage as must have taken place some days before death, in order to form the large white firm clot found, could have occurred without marked symptoms.

2. That a rupture sufficient to give vent suddenly to so large an amount of blood at one time should have again closed, even temporarily, the more so as there was no evidence of any attempt at spontaneous cure. That the large white clot was the result of a rapid effusion of blood, I think is proved by the perfect homogeneity of the clot both as to colour and consistence.

3. That with one lung compressed to absolute uselessness, and with a pleura full of clot, there should be no apparent interference with respiration.

Of the practical lesson to be derived from the foregoing case, it is hardly necessary to speak.

ART. XII.—*Two Cases of Recovery from Diphtheritic Croup, one case with, the other without, Tracheotomy.* By R. and R. J. McCREADY, of Sewickley, Pa.

CASE I. January 4th, 1874, was called to see Marg. H. McM., æt. 21 months. She had been feverish all night; complained of throat; the tonsils were swollen; soft palate covered with eruption of scarlatina; ordered carb. ammonia half gr. every three hours, and inunctions of lard over whole body.

January 5. Eruption well marked on face and neck; cervical glands swollen.

6th. Eruption over whole body; throat very sore; ordered wash of alum and honey; suffers from difficulty of swallowing on account of extreme swelling of cervical glands. 4 P. M. Dr. Mowry, of Alleghany City, called in consultation, who concurred in diagnosis, and on account of more local effect on throat ordered R. Tinct. ferr. chlorid. xxxij; chlorate potass. ʒij; aqua, ʒij. Sig. A teaspoonful every three hours in sweetened water.

7th. Early this morning had several passages of a muco-sanguinolent nature; ordered chalk mixture; breathing better; glands not so much swollen.

13th. 9 A. M. Fever has entirely subsided; throat well; tumefaction of glands disappeared; child is sitting up playing with her toys; consider her convalescent.

13th. 6 P. M. While visiting another member of the family, noticed the child cough and thought I could detect a slight stridulous tone. On inquiry, the mother stated that she had observed the child cough a little hoarse two or three times before this afternoon; found a small patch of diphtheritic membrane on tip of uvula, also on top of the epiglottis; ordered tinct. of iron and chlorate of potassa to be administered as before.

14th. 8 A. M. Patient restless all night; skin very hot; pulse frequent; breathing laboured; cough characteristic of well-marked laryngeal trouble. Ordered emetic of syr. of ipecac and pulv. alum.

7 P. M. Dr. Mowry again saw the patient, who is still growing worse; tried to use the lime-water spray, but, on account of struggles of the child was compelled to desist. Gave three doses of alum and ipecac, but without effect.

10 P. M. Breathing of patient can be heard in all parts of the house; she tosses from side to side; passes from person to person, vainly seeking for more breath. Raised temperature of room to 80°.

15th. 7 A. M. Has not slept any all night; unable to take more than a sip of milk on account of its being sucked into trachea by violent inspirations; tried again without avail to produce emesis by titillating fauces; the lips of the child being livid and finger-nails blue; pulse 140. Told the parents the only hope was in tracheotomy, but that this would not necessarily save her life, but would afford one more chance. We asked for additional counsel, and Dr. A. G. Walter, of Pittsburg, and Dr. Mowry, of Allegheny City, met us at 6 P. M. After examining the patient, all agreed that the child could possibly live but an hour or so longer unless relieved by tracheotomy. Pulse at this time was so frequent and feeble that it could hardly be counted. While we were consulting, they called to us to haste, as they thought the child was dying. It being then 6.30 P. M. it was necessary to operate by artificial light. The child was placed in the usual position for the operation. Indeed, it did appear as if it were a useless undertaking at this time, as the child was already powerless. The strangers did not attract her attention; her features wore the expression of intense agony, such as a person suffering from a severe attack of asthma. Ether was very carefully administered. The trachea was skilfully opened by Dr. Walter, by an incision through three of the cartilaginous rings immediately below the cricoid cartilage. There was considerable venous hemorrhage, which was controlled by sponges placed on ice and pieces of ice placed on the wound. When the incision was made into the trachea, breathing ceased, but respiration was re-established by pressing on the thorax and holding open the trachea by means of retractors. The edges of the wound were held open by means of wires held back by adhesive plasters. Child went to sleep and slept quietly for two hours; after that gave half gr. Dover's powder every three hours. Did not sleep well during the remainder of the night, partly due to mucus obstructing the opening in the trachea. Applied flaxseed poultices to the chest; child took several drinks of milk during the night; temperature of room 76°; generated steam as freely as possible.

16th. 7 A. M. Cleansed wound thoroughly; inserted a double silver canula for the first time; child slept two hours. Ordered powders of pulv. ipecac et opii and quin. sulph. āā gr. ss, every three hours. To give all the beef-tea and milk she will take, also, a teaspoonful of whiskey every three hours.

17th. 9 A. M. Pulse 130; sleep disturbed on account of having to remove the inside tube every five or ten minutes on account of its becoming obstructed with mucus. Takes on an average $\frac{3}{4}$ ij of milk every two hours.

17th. 4 P. M. Restless all P. M.; removing inside tube does not appear to relieve her. The obstruction being chiefly to expiration, we thought there might be a plug of mucus around lower end of outer canula. We removed both canulae and found a ring of mucus surrounding the outer canula which had acted as a valve, fortunately only partially closing the opening during expiration; removed wires, adhesive plasters, and everything from neck; washed with warm water and castile soap. The wound was covered with a dirty brown membrane similar to that in fauces. Applied to the wound a solution of argent. nit. 20 gr. to $\frac{3}{4}$ j; oiled wound with carbolized olive oil; replaced canula without difficulty, first inserting it in a wide slip of adhesive plaster in order that the wound might be protected from shoulders of the canula. Child went to sleep and slept quietly for one hour. Removing canula does not disturb her so much now, as we keep it well oiled with carbolized oil.

7 P. M. Dr. Walter visited the patient.

18th. 9 A. M. Pulse 120; respiration 30; has rested well all night; we placed the thermometer in an adjoining room and raised the temperature to 76° ; moistened the air with steam and then removed the child to this room. The patient's room was thoroughly cleaned and aired; bed-linen changed and windows all left open for some time; while the room was being cleaned we removed both canulae and washed the wound as before. The thermometer was then removed to patient's room, and when the temperature had reached its proper height we removed the child.

19th. 9 A. M. The cleaning of the room repeated as before; while this was being done the child was thoroughly bathed; clothes all changed; entire canula removed. Heretofore the child has been getting opiates regularly, but when patient was taken back to her room she went to sleep and slept quietly for two and a half hours.

19th. 1.30 P. M. When awoke from sleep took a glass of milk, and went to sleep again. Pulse only 96. It had fallen in two hours from 120 to 96, as 120 was the lowest her pulse had been since some time before the operation; respiration 24.

20th. 9 A. M. While removing cannula and dressing the wound, a large piece of tough membrane was expelled through opening in trachea.

21st. This morning, while being bathed, she noticed her toys, and pointed to them, took her doll in her arms, and brushed its hair with her brush.

24th. Can breathe a little through the larynx for the first, while the opening in the trachea is closed; but after three or four inspirations shows signs of suffering.

26th. Breathing through larynx still improving, but points to the canula, then to her throat, as if to say "put it in again."

28th. 10 A. M. Removed canula; wound very small, hardly room for canula; wound closed with adhesive plaster. Child said "mamma" plainly but quite hoarsely; walked three or four steps to her mother.

Concluded to leave the canula in another day, as the child does not appear quite comfortable without it.

29th. 9 A. M. Removed canula; closed the wound with adhesive plaster.

30th. 10 P. M. Breathing not so tranquil as heretofore; applied a flaxseed poultice over neck and breast; went to sleep, and slept quietly the remainder of the night, only waking to take a glass of milk.

Time from opening of trachea to removal of canula, $13\frac{1}{2}$ days.

Remarks.—As proof of the first attack being a true case of scarlatina, we would state that an uncle of the child while on a visit to the house contracted scarlatina, which ran a regular course. There were also several cases of scarlatina in the village at the same time. As proof of the true diphtheritic nature of the second attack, we would refer to the wound forty-eight hours after the operation being covered with membrane, also to two brothers of the little girl who each had an attack of diphtheria, in which the membrane in the throat and the constitutional symptoms of the disease were well marked. The father of the child had a scratch on his finger; a membrane formed on it; we applied nitrate silver, and removed the membrane, but it re-formed in a few hours. Before the child recovered, another uncle of the patient, who assisted in waiting on the child, took diphtheria, and passed safely through the disease.

We will give a short account of the after-treatment of this case, as we think more cases of tracheotomy would be successful by careful attention to the minutiae after the operation. As the most important, we would mention: 1st. The uniform high temperature and moist atmosphere of the room. 2d. Attention to the canula. 3d. The ventilation. 4th. The thorough use of disinfectants. 5th. The attention to the patient. The temperature of the room for three days after the operation was not allowed to vary a single degree from 76° . The thermometer hung at the head of the bed. The moist atmosphere was maintained by two large tea-kettles on the grate, with a sheet-iron blower above them, in order to increase the draft, and to prevent the escape of the steam by the chimney. Vessels were placed in the room filled with boiling water, and they were kept steaming by means of hot bricks placed in them. The room was thoroughly ventilated every day, as stated in the history of the patient. The disinfectants used were permanganate of potassa and carbolic acid, placed in large vessels filled with water under the bed, and changed regularly every three hours.

The canula, being so small, required constant attention; sometimes it would hardly be inserted until it would have to be removed; frequently it was necessary to pass a feather through the canula into the trachea to excite coughing, in order to expel the mucus from the trachea. The canula and wound were kept oiled with carbolized olive oil. The attention to the child consisted in bathing and changing clothes once per day. The only clothing worn was a suit of flannel, with stockings, next to the skin;

enveloping the chest in front and rear was oiled silk, which acted as a poultice. We cut a hole in the silk just large enough to let her head slip in, then strapped the silk down with adhesive plaster. This dressing was changed each time she was bathed. The most of the nourishment consisted of good rich milk, of which she was very fond.

For the first four or five days she was subject to severe coughing spells, so severe that she would almost strangle. After each of these we gave her a small teaspoonful of whiskey in milk. It was necessary to use an enema occasionally, on account of the Dover's powders. We see this child frequently; her voice appears as clear as before the operation.

CASE II. October 14th, 1874, was called to see a neighbour's child, æt. $4\frac{1}{2}$ years, who had complained of his throat during the day. Pulse 100; skin hot and dry; tonsils red and swollen, with a slight exudation on one of them. Ordered potass. chlor. gr. iiss every three hours.

October 15. Pulse 110; cervical glands swollen. Does not complain so much of throat. Did not rest well during the night. Holds his mouth partly open. Both tonsils were covered with membrane. Diagnosis diphtheria. Ordered J. L. Smith's formula for tinct. iron and potass. chlorat., to give him plenty of milk, beef-tea, broths, etc.

16th. Pulse 110; skin not so hot. Rested better last night. Parents state he made a great deal of noise breathing while asleep; that appeared to come from his throat. The membrane of one tonsil is partly detached, and flaps up and down with each act of respiration. Patient looks brighter, is dressed, plays about the room for a few moments, then lies down to rest. Cautioned the parents to be careful, and not let him be exposed to any drafts of cold air.

18th. Pulse 90. Patient looks bright, and appears well. During my visit noticed the child cough slightly, and thought I could detect a croupy sound; when he coughed again it was more marked. I inquired if they had noticed the character of his cough. They said they had noticed him cough a little croupy at 4 A. M. They then told me that the child had slipped out at the door the day before, a very cold and raw one, and he was gone several minutes before they had noticed his absence. Ordered the patient to be kept strictly to the warm room, and be more diligent than ever in giving him plenty of nourishment, as in all probability he would need all his strength to baffle with the present form of his disease. 8 P. M. Pulse 100. Patient still bright, but coughs more frequently. Told them not to bring him from his room in the morning. They are surprised at my uneasiness in regard to the child.

19th. 8 A. M. Pulse 110; skin hot and dry; coughs oftener and more croupy. Did not rest well last night. Membrane has entirely disappeared from fauces. Placed a thermometer at the head of his bed, with instructions to keep the temperature of the room from 75 to 80°. Tea-kettles to be placed on the grate, arranged as in Case I. Patient refuses food this morning; ordered to administer it regularly as medicine. 9 P. M. Have seen the child frequently during the day; is still growing worse; coughs almost continually; face very dark colour; medicine changed to ammoniæ carb. 1 gr. et quiniæ sulph. $\frac{1}{4}$ gr. every three hours. Used the lime-water spray.

20th. 8 A. M. Pulse 130; temp. $102\frac{1}{2}^{\circ}$. Did not sleep any all night. Expression of agony on his countenance; tosses from side to side; have

to force him to taste his food. 8 P. M. Dyspnœa still increasing; has severe attacks of coughing; when they came on we slaked lime and held him over the fumes. Breathing can be heard in all parts of the house. Expecting to see the child strangle in some of these severe attacks, concluded to have everything ready to open the trachea. When on my way to the office, and about one hundred yards from the house, the child being up stairs in a closed room, I could hear him breathing very distinctly. Child did not sleep any during the night, but kept tossing about the bed.

21st. 9 P. M. No change, except appears drowsy, and the attacks of coughing are not quite so frequent. Pulse 140; temp. $103\frac{1}{2}^{\circ}$. Blood is very imperfectly aerated, as his face is almost purple. Remained with the patient all night. When I left there appeared to be some little improvement.

22d. Has been gradually improving during the day; has slept some three hours; does not resist the food quite so much.

23d. 9 A. M. Parents stated that the child coughed up something in his throat, but before they could get him to spit it out he swallowed it. Ate a little food this morning with some relish. From this time the patient gradually improved; had no further trouble, except some six weeks after had some paralysis of the palatine muscles, which allowed the fluids to regurgitate through his nostrils.

Remarks.—We present this case as one treated without emetics, without calomel, but by tonics and stimulants. We believe that the atmosphere of the room and the use of the slaked lime were valuable in this case. The patient resisted the lime-water spray so much that we were unable to use it more than three or four times each day. We do not wish to be understood as claiming this treatment as something new, but to add one more successful case in its favour.

ART. XIII.—*Case of Severe Prolapsus Recti of eight years' standing; Cauterization by Nitric Acid; Operation by Clamp and Cautery; Prompt Recovery and Cure.* By FRANK D. BEANE, M.D., of New York.

THE following case came under my care February 25, 1875 :—

Mrs. P., æt. 42 years, English, married, mother of two children, ceased to menstruate about five years ago; has always enjoyed good health. Has been "a hard worker," accustomed to lifting heavy articles in the capacity of domestic, to which cause she attributes her present trouble. About eight years ago she began to be troubled by a slight "falling of the bowel," greatly increased after the birth of her younger daughter, now nearly seven years old; and for the past five or six years she has been nearly as much afflicted as at present. Constipation has existed many years, requiring the habitual use of aperients daily. Never had piles. No indulgence in stimulants, but whenever she would imbibe a glass or two of her national beverage—beer—the prolapse was greatly aggravated. This affliction has

never been painful nor attended by hemorrhage, but by a constant mucous discharge; nevertheless it has been a great discomfort and inconvenience. Patient always able to reduce the prolapse easily. Never consulted advice till the present.

At the present time, walking a block or two, lifting a pail of water, or the like, going up and down stairs, even sitting to urinate, and, of course, the act of defecation, etc., cause prolapse of the bowel, which I find to the extent of three and a half inches of the *entire gut*. The mucous membrane is of little darker than normal appearance, not tender to the touch.

Thorough examination by the finger and Sims' speculum reveals no stricture or abnormality. Uterus in normal position and healthy. Stools natural in colour and consistence, only hard and scybalous from neglect of the aperient pills for two or three days. Patient desires a cure.

To note its effect, I to-day (Feb. 25th) thoroughly applied acid. nitric., C. P., in five broad vertical stripes the whole length of the prolapsed tissues, first having wiped the mucous membrane perfectly dry. Constant application of ice to the fundament was required for twenty-four hours, also opium, to relieve pain. Moderate febrile movement, accompanied by considerable pain in the region of the duodenum and ascending colon, for two days. Perfect rest in bed for five days. Bloody stool three days; both defecation and micturition attended by prolapse. After this, enemata of decoction of rhatany, liq. ferri subsulph. (gtt. xv to xx each time) twice daily, were successively employed for a couple of weeks, *all without the slightest effect*. I advised, and she accepted, an operation. March 29th, assisted by Drs. J. S. Fitzgerald and B. C. McIntyre, patient under Squibb's ether, I drew down the bowel (spontaneously reduced by muscular efforts during anæsthetization) with some difficulty, and it was held by Dr. F., while I applied Henry Smith's clamp-écraseur successively to two anterior and two posterior vertical folds of mucous membrane (three included a length of $1\frac{3}{4}$ inches each, the other $1\frac{1}{2}$ inches), cut off half the tissue above the clamp and burned the rest to the level of the instrument by the *actual cautery*. The tissue removed, *in toto*, had a vertical diameter in each stripe of $\frac{1}{4}$ inch. Anointed the parts with carbolized oil (1 : 8) and returned them within the sphincter.

An enema given previous to the operation emptied the bowel thoroughly. Etherization was unusually slow on account of vomiting. Before the operation, pulse 72, regular, full, soft—temperature (axilla) 100° F.

Five hours following, pulse 84, temp. 99.4° F. To take tr. opii deod. (Squibb) at bedtime, and thereafter to relieve pain. Ice *ad libitum*. Milk and broth diet.

The temperature stood at 100° F. the eve of the first and second days following; thereafter ranging from 99.3° F. to 99.6° F., on the eighth day, normal. The pulse 88 and 86 the first two days, then normal (72). No other pain than a dull ache in the rectum was present till the fifth day, when confection of senna produced a small stool, causing considerable *smarting* pain at the anus, requiring a good dose of opium, otherwise only taken at bedtime for sleep. The eighth day slight oozing of blood followed stool, merely enough to stain napkin. To resume ordinary diet, heretofore liquid principally. To inject and retain f3ij, morn and eve, of a solution of chlorate of potassa, ʒss ad f3j.

29th day. Began sitting in chair the 14th day, to walk the room and hall the 21st. Natural stool daily by aid of aperient pills, painless after the 12th day. There has been an involuntary flow of muco-pus at

times during the day, sufficient to soil napkin, till the past two days, ceased. Discontinue chlorate enemata. Although she sits upon *pot de chambre*, walks much, and sits up all day, *there has not been the slightest prolapse since the operation.*

Per speculum. Mucous membrane perfectly normal, disappearance of the bluish hue. Wounds thoroughly healed, leaving four firm cicatricial columns; columns retracted, the mucous membrane thrown forward in folds on either side of each. No apparent tendency to prolapse.

44th day. Has walked long distances, washed, ironed, etc., with perfect impunity. And now (June 22), remains perfectly well, having resumed her ordinary household duties and exercise.

Remarks.—The predisposing cause in this case was undoubtedly constipation, aggravated by the habitual use of purgatives through their debilitating influence upon the nervous and muscular force of the intestines. Her labours had both been extremely easy, recovery from delivery prompt, never suffered uterine complaint, so that here was no eccentric cause. The absence of hemorrhage, hemorrhoids, and pain was certainly remarkable, considering the long existence of the disease. The case is unique as regards the slight exciting cause of prolapse, as simply walking so short a distance as a block. The inefficiency of the nitric acid cauterization, so happy in its results in a case reported lately by Mr. Jonathan Hutchinson,¹ was manifest, inasmuch as not the slightest effect followed, although aided by perfect rest in bed and the after use of astringent enemata. The tendency to abdominal inflammation, however, was as clearly shown as in the above-mentioned case, but the effect of opium treatment was more pronounced, or, more probable, the patient's excellent constitution was better able to resist the threatening evil.

The operation scarcely needs further recommendation of its superior advantages than this case demonstrates. Not difficult of performance, an entire avoidance of hemorrhage by reason of the firm eschars, pain following no greater, if as great—less in this instance—and nothing like the shock and constitutional disturbance following the nitric acid treatment, *its effects are immediate and permanent*, provided proper care of one's self be afterward observed.

The fear of subsequent stricture has no force when this is compared with the nitric-acid treatment; in the one case the amount of tissue removed and to slough is carefully calculated and regulated, in the other the sloughing is necessarily bounded by no such line; may extend to an undesired, unfortunate limit, especially in cases where, whether from constitutional debility or local irritation, the mucous membrane may be preternaturally unresisting, and its diffuse, sympathetic influence be incalculable. The operation is as safe as for hemorrhoids by any method; septicæmia, etc., not at all likely to occur—effectually guarded against, because the opposite surfaces below the eschar are so firmly coaptated by the clamp as

¹ Med. Times and Gazette, March 27, 1875.

to really make them a solid mass, a well-nourished base upon which is superimposed a dense eschar, to be rejected by a clean process of ulceration.

Astringent lotions, enemata, suppositories, trusses, etc., are a delusion in cases of any moment; troublesome and discouraging to patients, unsatisfactory to the surgeon. Other operations, as snipping off a fold or two of skin at the verge of the anus, removal by ligature of pieces of the mucous membrane, Dupuytren's like removal by scissors, excision of a V-shaped piece of the sphincter ani, canterization by nitric acid, are all greatly inferior to the operation by clamp and cautery, by reason of their *inefficiency*, hemorrhage, or subsequent bad results. The special advantages of this operation over nitric acid are:—

1. Absence of danger from abdominal inflammation.
2. Absence of hemorrhage.
3. An immediate cure follows a well-performed operation; non-requirement of its repetition.
4. Accuracy with which the amount of contraction of the mucous membrane may be determined. *No danger of subsequent stricture.*
5. Presence of *firm* vertical supporting cicatricial columns, with the sphincter ani for a base, in addition to the narrowed calibre of the gut.
6. Lessened danger from absorption of septic material from sloughing surfaces, even in cachectic subjects.

Referring to the various surgical authorities of to-day, I find Gross, Erichsen, Spence, Hamilton, Van Buren, Ashton make no mention of this; Allingham merely refers to it briefly and in discouraging terms; but Henry Smith¹ lauds it; Bryant says: "Few operations in surgery are more successful than this, and although in children it is probably never called for, in adults it should never be rejected, except for the same causes as operations for hemorrhoids," and Ashhurst recommends it as the best of operative procedures.

In conclusion, when we possess means which will effect the desired result, *cito, tute et jucunde*, simply requiring decided and confident recommendation by the surgeon, suffering humanity should no longer be annoyed by tentative, timid, palliative measures, but *primarily* receive that treatment from which, *finally*, the cure is obtained.

P. S. Sept. 1, 1875. At this date Mrs. P. remains exceedingly well in spite of much walking and other exercise of a *more injurious* nature; and physical examination per speculum, etc., shows a perfect condition of the parts, as at last report.

217 WEST 10TH STREET, NEW YORK, June 22, 1875.

¹ Surgery of the Rectum, London, 1871. His observations and experience, pp. 106, et seq., will afford the reader much interest and instruction.

ART. XIV.—*Large Multilocular Ovarian Cyst of long standing; Two Tappings; Ovariectomy; Veratrum Viride and Quinia in After-Treatment; Recovery.* By W. HUTSON FORD, M.D., (lately) of New Orleans.

MRS. E. D., of Attala County, Mississippi, an active cheerful woman, æt. 44; married in 1848, mother of eight children. Had a severe attack of measles, with consequent broncho-pneumonia, in March, 1849. Has suffered from cough and bronchorrhœa ever since. During last ten or twelve years, has had some uterine prolapse with leucorrhœa. Always menstruated regularly until within a few months back. General health hitherto good, the pectoral troubles excepted. She first noticed a tumour in the abdomen, in the summer of 1867, seven years ago. This gradually increased in size, though producing very little effect upon her health, and scarcely interfering with the usual avocations of a farmer's wife. Has not had any attacks of partial peritonitis, so common in these cases, nor any in the tumour itself, nor has she suffered from gastric disturbance or intestinal derangement. Within a year past, has been troubled with exacerbations of the cough, and increasing dyspnœa, attributable to pulmonary œdema and hydrothorax. Was tapped in linea alba in August, 1874; half gallon of dark, grumous, chocolate-coloured fluid obtained. There was no subsequent peritoneal inflammation.

I first saw her Sept. 20, 1874. Her girth was very great, and the surface of the abdomen traversed everywhere by large and tortuous venous trunks, testifying to the obstruction of the deep return currents. Nevertheless there was no œdema anywhere, not even about the malleoli, probably owing to the unusually slow growth of the tumour. When she was placed in the recumbent posture, the walls of the abdomen could be slipped about over the tumour freely—with the production of a very distinct friction-sound, similar to that which might be produced by rubbing a wet surface of glass with a piece of thin non-vulcanized caoutchouc. Deep fluctuation was well marked in several parts of the abdomen. Palpation determined the existence of several hard bosselated protuberances in different places, notably in the hypogastric and iliac regions. On striking the abdomen in the left iliac fossa with four fingers placed together, the blow being slight and quick and directed upwards, a wave of moving fluid could be very plainly *seen* to advance upwards to the stomach, and to be thence reflected from the surface of the viscera, or of the diaphragm, downwards again into both iliac regions. In view of these facts I diagnosed a non-adherent multilocular ovarian cyst.

On tapping, two inches to the right of the umbilicus and an inch below it, two gallons and a quart of chocolate-coloured grumous fluid was obtained. This tapping I did in the recumbent posture; it was followed by no inconvenience or accident whatsoever. The fluid gradually accumulating and the dyspnœa reappearing, I performed ovariectomy on the 23d of October, 1874, at 10.30 A. M., after the usual systemic preparation. I had, however, before this, caused her to take considerable doses of quinia and iron with digitalis for some weeks. No morphia, however, or other opiate was given, as has been recommended with a view to accustom the system, and stomach especially, to its use, for some days before the operation. The night before, she took fifteen grains of quinia, and at 6 A. M.

ten grains more. At the operation there were present Drs. G. W. Scarborough, of Kosciusko, Miss. ; S. K. Coleman, of Canton, Miss. ; Richard G. Gantt, Collins, and Mr. Dodson, medical student. Anæsthetization with sulphuric ether took about half an hour ; once, a little chloroform was thrown upon the sponge, whereupon the patient vomited, and continued to do so, though not violently, for a quarter of an hour. Afterwards, however, the vomiting ceased, and she became unconscious ; the pulse remaining very good, and the respiration full and free. Once, also, there was a sudden flushing of the face, which quickly passed off. I attributed all this to the chloroform, as she had experienced similar troubles in the first tapping, in which chloroform had been given. As the patient lay on the operating table, she measured seventeen inches from ensiform cartilage to pubic symphysis ; and forty-one and a half around the abdomen through the umbilicus. The knife was entered two inches below the umbilicus, and a mesial incision made four inches long. The linea alba, being hit upon, was similarly incised. The peritoneum was opened and divided to the extent of the external wound. Thus far there was no hemorrhage, only a very little oozing. About two pints of ascitic fluid escaped on opening the peritoneal cavity, and the tumour presented fairly at the wound. I passed in my hand and found no adhesions save at the sites of the previous punctures made in tapping. The tumour was now tapped with Atlee's large trocar ; about fifteen pints of dark chocolate-coloured fluid escaping. After the partial collapse of the tumour, on attempting to draw it through the wound, I found it impossible to do so, notwithstanding the apparent absence of adhesions. Tapping high up in the incision brought only an insignificant quantity of gelatinous transparent fluid, evidently from a young cyst. I therefore enlarged the wound by successive strokes of the knife from within outwards upon my finger as a director, until the wound was large enough for me to pass in my hand. Introducing my right arm nearly to the elbow, far up into the sub-diaphragmatic space occupied by stomach and spleen, and disengaging the mass which entirely filled this region, I drew downwards gradually into the orifice another full cyst, separated from the one first tapped by a hard mass of adventitious tissue, and entirely out of the reach of the trocar through the primary incision. As this unwieldy mass appeared at the opening in the abdominal walls, it was tapped adroitly by Drs. Coleman and Gantt without the least spilling of its contents into the abdominal cavity. The whole growth was now withdrawn through the wound (which was eleven and a half or twelve inches long), and was found to spring by a pedicle some three inches broad and not more than two inches long and a quarter of an inch thick, from the right broad ligament. The Fallopian tube was incorporated with the neck of the cyst. The pedicle being short, I determined to follow Macleod's method and twist it off. Accordingly an Atlee's improved clamp was applied to the pedicle quite up to the body of the uterus, and the pedicle cut off with the scalpel about an inch and a half beyond the clamp. The stump of the pedicle now left was divided into two parts with a bistoury, *i. e.* split in its middle line, and each half separately twisted off with a small hand vise, while an assistant held the clamp immovable. On removing the clamp afterwards, some little hemorrhage was observed, requiring a carbolized catgut ligature, and a few touches of the brush dipped in Monsell's solution. Presently, however, it became evident that arterial hemorrhage was going on, and searching along the line of the wound now extended along the broad ligament, a nodule of extravasation, as big as a large acorn, was

observed to have been formed in connection with the spermatic artery, which was seen to be bleeding pretty freely, notwithstanding the twisting. This hemorrhagic nodule was enucleated by the fingers, and the artery tied with a fine carbolized catgut ligature cut off close.

After all hemorrhage had apparently ceased, and the fluids contained in the abdomen removed as carefully as possible by the sponge, and dipped out of the right iliac fossa, the patient was gently rolled over on her right side, so as to allow any fluid loitering around the uterus and rectum to gravitate thither, the viscera meanwhile being gently held back by pressure upon the abdominal walls; the incision was then closed. I did not think it necessary to insert a drainage tube, though provided with various modifications of such apparatus, in view of the general absence of adhesions and little consequent danger of continued trickling of blood into the abdominal cavity. The wound was closed by quilled suture. Thirteen deep silver sutures were introduced by a hollow needle (similar to Keith's), and fourteen fine silken carbolized sutures were passed superficially. After some twenty minutes, the patient being still on the operating table, what seemed to be a small knuckle of intestine was observed two inches below the umbilicus, between two of the sutures. This was thrust by the finger downwards into the abdomen, the deep sutures near by tightened, and one or two additional superficial ones introduced. The line of the wound was smeared abundantly with styptic colloid, and a piece of lint smeared with carbolized cerate laid over its whole length. Across this, the line of sutures was fortified as usual by long strips of adhesive strap passing clear over upon the flanks. A wide bandage, well padded in the ileo-lumbar regions with raw cotton, completed the dressing. The patient was then put to bed. The whole time of the operation, including the etherization, was one hour and forty minutes. The tumour proved to be a multilocular cyst of the broad ligament. There was an almost countless number of secondary cysts. None of these had begun to suppurate, or contained any of the viscid, creamy matter so like pus, often found in advanced growths of the kind. The larger cysts contained grunous, chocolate-coloured fluid, such as was obtained by the tapplings; the smaller ones, of the size of a pea up to that of an orange, with walls in some cases no thicker than writing paper, contained only transparent ropy matter. The fluids drawn from the cyst during the operation, in conjunction with the extirpated mass itself, weighed *thirty-eight and a half pounds*. Estimating the ascitic fluid which escaped at a pint and a half, the contents of the abdomen removed were not short of *forty pounds*.

The after-treatment may be briefly described as follows: In order to prevent septic infection, quinia in ten-grain doses was given by enema, morphia being freely given in this way alone. At 7.30 P. M., six hours after the operation, the pulse being at 110, the administration of pills containing two grains of quinia and two drops of Norwood's tincture of veratrum each was begun. This medication by quinia and veratrum conjointly, with occasional doses of morphia and some whiskey at night, was continued for the first ten days.

The cough with which she had been previously troubled for years, was a source of much annoyance to her and no little apprehension to myself; but it gradually became less violent. She was made sick by the veratrum once only; she vomited a little on the sixth day, and had some hiccough. This was, without doubt, partly due to the influence of veratrum, but I am inclined to attribute it in part also to the morphia and quinia. It

yielded readily to sinapisms and a little whiskey and water, ether, and hypodermic of morphia. On the fourth day she had distinct threatenings of septicæmic infection; this was met by enemata of quinia dissolved by Monsell's solution in water.

The wound healed wholly by first intention, excepting for one point of insignificant extent. The bowels did not move until the twelfth day. I did not remove the deep sutures until the eighth day. The following is the record of pulse and temperature:—

1st day, morning, operation; evening, 4 P. M. 88, 9.30 110.
 2d day, morning, pulse 110, tem. 100° ; evening, pulse 100, tem. 100° .
 3d day, morning, pulse 74, tem. 100° ; evening, pulse 82, tem. 100.5° .
 4th day, morning, pulse 65, tem. 100.5° ; evening, pulse 82, tem. 100.3° .
 5th day, morning, pulse 82, tem. 100.5° ; evening, pulse 80, tem. 100.5° .
 6th day, morning, pulse 54, tem. 100° (this was the day of the attack of gastric veratrum); evening, pulse 84, tem. 100° .
 7th day, morning, pulse 84, tem. 99.5° ; evening, pulse 84, tem. 99° .
 8th day, morning, pulse 82, tem. 100° ; evening, pulse 76, tem. 99° .
 9th day, morning, pulse 86, tem. 99° ; evening, pulse 82, tem. 100° .
 10th day, morning, pulse 84, tem. 100° ; evening, pulse 88, tem. 100.5° .
 11th day, morning, pulse 76, tem. 98.5° ; evening, pulse 76, tem. 98° .
 12th day, morning, pulse 76, tem. 98° ; evening, pulse 82, tem. 99.5° .
 (Bowels moved of their own accord.)
 13th day, morning, pulse 84, tem. 99.5° .

The highest reading of the thermometer observed was on the fifth day, at 1 P. M., viz., 101° . The highest pulse rate was 110, during the twenty-four hours following the operation. The highest rate of pulse observed after veratrum was begun was 100, the lowest 54 to the minute. After veratrum had been administered during twenty-four hours, the highest observed pulse rate was 95. The veratrum was steadily given night and day with great care, during nine days. The mean rate of pulse during this period, exclusive of the first twenty-four hours, was 81.5 per minute, as calculated from seventy recorded observations. I did not think it at all advisable to invite any motion by purgatives or enema. The bowels were left to themselves, and, being no doubt paralyzed, at once by the operation, by the subsequent inflammation, and by the repeated enemata of morphia, did not act until a late day. I think that some spasmodic contraction of the rectum was caused by inflammation in the retro-uterine cul-de-sac. The presence of inflammation here was indicated by pain attendant upon the exhibition of enemata.

In a previous case of ovariectomy (see No. of this Journal for July 1873), I did not use quinia so heavily, nor veratrum at all. From a long experience with the latter agent, I am led to believe that its use after this operation, if vomiting can be controlled or prevented, will very greatly tend to diminish the liability to peritonitis, while the exhibition of heavy doses of quinia will counteract the disposition towards septicæmia, especially apt to manifest itself where no drainage is provided for.

I am quite pleased with the employment of ether instead of chloroform. It is evidently a safer agent, and free from several disadvantages attaching to this latter substance. It does not produce vomiting, recovery from its effects is prompt, and it does not disorganize the blood or paralyze hepatic action as chloroform seems to do.

Nearly seven months have elapsed since the operation, and our patient is quite well; as active as before she was affected seven years since, and

free from all inconvenience. Her old chronic cough has almost entirely disappeared.

I think there can at this time be very little question as to the propriety of treating the pedicle by *torsion*. The day of the "clamp," it seems to me, is passed. If, however, a pedicle be broad, there is much danger of lacerating the coverings of the uterus, and unduly contusing the neighbouring peritoneum, if we attempt, as has hitherto been done, to twist off the whole pedicle at once, however securely it may be held. I therefore split it into two parts, and intend splitting it into three or even four digitations, twisting off each of these, one at a time, while they are all securely held by a proper instrument. I have devised a holder and twister, which I shall lay before the profession as soon as I have given them a trial.

CANTON, MADISON COUNTY, MISS., May 10, 1875.

ART. XV.—*Extirpation of both Superior Maxillary, Left Malar, and Pterygoid Process of Left Sphenoid Bones.* By A. E. CAROTHERS, M.D., of Saltillo, Mexico.

THE excision of both upper jaw bones is an operation which has been so seldom performed, that its feasibility as well as its utility, as shown by the results obtained, must be a matter of interest to the profession. The following case, which occurred in my practice in this city, was so satisfactory in the latter respect, that I am tempted to present it to professional notice through the columns of this Journal.

Crecencio Zuñega, æt. 36, a native of Mazapil, in the adjacent State of Zacatecas, a miner by occupation, came to this city to consult me on July 30, 1873. His account of himself is, that he has worked principally in smelting works for the reduction of silver-bearing lead ore, and has suffered in consequence from the usual results of colic, paralysis, etc. He says he suffered from a suppurating bubo twelve years ago, which was treated with cataplasms, ointments, etc., but took no medicine internally; in fact, has never taken any medicine in his life.

He commenced suffering from pain in an upper molar tooth of left side one year four months ago, which gradually extended to all the teeth and upper jaw bones on both sides, accompanied by a discharge of fetid pus from the alveoli. The pain finally became so severe as to deprive him of rest, and cause him to seek surgical relief.

Upon examining him, I found marked "*wrist-drop*" of both hands, a condition very common among men of his occupation. The left side of the face was considerably swollen, pushing the nose to the right side of the median line, presenting on that side the appearance of "frog-face." The vomer was entirely absent, the teeth were loosened in their sockets, and the palatine arch was nearly filled by the swollen soft tissues. There

existed two fistulous orifices, one three-fourths of an inch below the outer canthus of the left eye, the other slightly below this, through which the necrosed malar and superior maxillary bones could be felt with the probe. Offensive pus was discharging from the nostrils, gums, and fistulæ.

On July 31st, assisted by Drs. Smith and Figueroa, I operated for the extirpation of the left malar and superior maxillary bones, making the incision recommended by Gross, from the margin of the nose below the inner canthus of the eye, carrying it outward parallel with the inferior margin of the orbit, through the upper fistula, to about the middle of the zygomatic arch, and slightly below it. Another incision was then made, connecting the two fistulous orifices, and continuing downward in an elliptical form to the angle of the mouth, dividing the cheek down to the bones. The bleeding in this incision was very great, it being necessary to ligate six branches of the facial artery enlarged by the inflammation of the parts. I then dissected up the gums, removed the teeth, and turned the flap up over the eyes, which discovered the bones very well. The malar was found to be free from bony attachments, and was removed by a wrench of the forceps, thus taking away the outer half of the floor of the orbit. I next freed the palatine process from the soft tissues of the roof of the mouth, pushing the handle of the scalpel along the bone to its posterior margin, from whence the palatine bones had been previously absorbed, and divided the symphysis between the maxillary bones with the bone-pliers, introducing one blade into the nasal and the other into the buccal cavities; when, to my pleasant surprise, I found considerable mobility of the bone, and, by the employment of forcible and careful manipulation, I was at length enabled to separate it and the pterygoid process of the sphenoid from their attachments, and extract them.

But, upon examining the cavity to remove such fragments as might have remained, the right superior maxillary was found to be in the same condition as the one extracted, and I proceeded to extirpate it also. Desirous of avoiding a greater loss of blood, which had already been immense, I determined to attempt its removal through the opening already made; to effect which the attachments of the gums to the alveoli and of the right cheek and nose to the bones were freely dissected up, and the flap drawn over the right side of the forehead as far as possible, the angle of the mouth being held outward and upward by the finger of an assistant, being greatly aided in this part of the operation by the absence of the vomer, which left the nose perfectly flaccid. The soft tissues of the palatine arch were then dissected away, the bone grasped with a strong forceps, and an attempt made to wrench it from its attachments, but it was still adherent in parts, the necrosis not being so complete as in its fellow, and it was necessary to use freely the pliers and chisel to effect its separation, which being completed as far as possible, the greater part was removed entire, and the rest subsequently in fragments, by the use of the gouge-forceps and gouge, care being taken not to leave any particle that showed signs of disease. On this side the orbital plate and the nasal process to the level of the infraorbital foramen were found to be sound, and were not disturbed, all the rest of the bone being either removed entire or subsequently gonged away.

Chloroform was administered at the outset of the operation, and the patient was under its influence while the preliminary incisions were being made, but the danger of strangulation from the great amount of blood poured out, the entrance of which into the throat it was impossible to

prevent, necessitated its suspension, and all the subsequent steps of the tedious and painful operation were borne in the full consciousness of the patient.

Considerable trouble was caused by hemorrhage from the anterior palatine artery, but it was finally controlled by filling the cavity with charpie saturated with liq. ferri subsulph. When all bleeding had ceased, the lint was removed, the cavity carefully cleansed, and the external wound closed with silver wire sutures; care being taken to establish a communication with the cavity through the lower of the two external fistulous orifices, into which the nozzle of a syringe could be introduced for the purpose of dressing, which was found very convenient in the subsequent treatment of the wound. It was then dressed with carbolic-acid water, ʒj to Oj, and the same solution was freely injected into the cavity several times daily. On the third day the wound was red and swollen, looking very much like an incipient case of erysipelas, and I ordered the addition of Goulard's extract of lead to the dressing, and gave tr. ferri chloridi gtt. xxx every four hours, under which treatment the wound soon regained its normal appearance. On the sixth day the ligatures came away, the wound being by this time firmly adherent, except at the points where the ligatures kept it open, which soon closed.

Up to the twelfth day the wound was supported by strips of adhesive plaster and a bandage, but on that day I removed all dressings, the wound being entirely cicatrized except at the orifice before referred to, which was kept well open by the insertion of a roll of lint.

The palate contracted adhesions with the opposed tissues of the upper lip and cheek, and was not so much retracted as would have been supposed from the size of the cavity. From the first the patient could swallow liquids, and could speak sufficiently distinctly to render himself intelligible, and continued improving, so that by the tenth or twelfth day he could eat meat cut fine and tortillas very well.

Nothing noteworthy occurred in the subsequent history of the case; the cavity continued filling up, deglutition and articulation steadily improved until November 19, 1873, when I met the patient in the street and had a photograph taken, after which he returned to his home.

I have heard from him at intervals since then; he continues in good health, and is earning his own subsistence. Comparatively little deformity resulted from the operation, though of so grave a character.

I am well aware that the removal of a necrosed bone is a much easier procedure than the same operation on a bone affected with a diseased growth, as an epulis, a sarcoma, or an encephaloid tumour, and I am also aware that I did not remove the *whole absolutely* of the right bone, still the operation may be of interest, from its rarity.

Prof. S. D. Gross, of Philadelphia, in a letter to me on this subject, of September 21, 1873, says that "the greater portion of both upper jaws were removed in 1824 by Dr. Rogers, of New York, and I am not aware that these bones have ever since been completely excised by any American surgeon," and my friend, Prof. S. B. Ward, of New York, writes me, October 13, 1873: "The first time this operation was *ever* performed was by Dr. David L. Rogers, of this city, in 1824, since which time it has been repeated by Parker, Carnochan, and James R. Wood twice, and in Europe

by Dieffenbach, Maisonneuve, Heyfelder three times, and others. Parker's case was that of a Norwegian sailor at the New York Hospital, with a myeloid tumour involving both bones, and was successful. Wood's two operations were for phosphorus diseases of both bones." Mr. Lane reports in the *Lancet* of January 25, 1862, a removal of both superior maxillary bones in 1861, on account of albuminous(?) sarcoma. These are all the cases of this operation that I have been able to collect. I believe, however, that few of these gentlemen claim to have removed absolutely all of both bones, and that they did not leave some portion of the orbital plate, or some piece of the nasal process; but that fact does not detract from the credit due them for this important innovation in conservative surgery any more than did the loss of all of his seven cases detract from that due Larrey for originating the hip-joint amputation, or from Mott, for the operation for innominate aneurism, because his successes were only partial.

The fact that I was enabled to remove both bones through the incision on one side of the face, also serves to lessen the gravity of the operation, the loss of blood being much less than when both cheeks are divided, as recommended by surgical writers, especially as in this case the side presenting the greatest difficulties was that opposite to the incision.

The operation will, of course, be more satisfactory in a country like the United States, where modern mechanical skill does so much toward repairing the ravages of the surgeon; but in my case neither the circumstances of the patient nor the resources of the country admitted of any such attempt.

SALTILLO, MEXICO, August 17, 1875.

ART. XVI.—*Stricture of the Urethra in the Female, and its Treatment by Electrolysis.* By ROBERT NEWMAN, M.D., of New York, President of the Northwestern Medical and Surgical Society.

JUDGING from the scarcity of the literature on the subject of stricture of the urethra in the female, the conclusions would be, that such a pathological condition is of extremely rare occurrence. Little of practical application is found in our best text-books. Even the extensive writings of the most eminent specialists are nearly silent on the subject. Scanzoni does not mention it; Thomas, in his fourth edition, says nothing about the matter. Neither do Bumstead, Niemeyer, Dittel, Gouley, nor Van Buren and Keyes. The latter two, in their extensive work on the surgical diseases of the genito-urinary organs, including syphilis, are silent on the subject.

The medical literature to which I have access, including the medical

periodicals of both Europe and this country, have been searched, and but few cases were found to which attention can be called.

Boucher, in the *Gaz. des Hôp.* No. 16, 1865, reports one case, cured by gradual dilatation. Boehm mentions another in *Berlin Cent. Zeitung*, No. 84, 1868. It was a traumatic injury, the stricture depending on direct accident, produced by a splinter of wood. After two years of intense suffering, the patient is reported cured.

Dr. Gross dismisses the whole question by saying: "The female urethra is rarely diseased. The principal lesions are strictures, etc. etc." Not a word, however, about its diagnosis, treatment, or anything relative to that pathological condition. Dr. Gunning S. Bedford says: "Stricture of the nrethra in the female is extremely rare," and cites one case. Velpeau, in his great work, cites only three cases, *en passant*. Holmes, in his exhaustive work on surgery, is comparatively silent on the subject under consideration. Ashwell, Simpson, and many other writers say nothing about this disease.

In my practice a small number of such cases have occurred, but during the last eighteen months the unusual number of four well-defined cases of stricture of the urethra in the female have come under my observation and treatment.

Stricture of the male urethra has been successfully treated by electrolysis, and the favourable results of the method have strictly fulfilled the ideal demands of its theory, and, on the whole, the results having surpassed the most sanguine expectations, no valid reason could be adduced why electrolysis should not accomplish the same in stricture of the female urethra. Hence, the purpose of this paper is to tabulate the clinical facts, and to bring to notice this class of troublesome ailments, which certainly are of more frequent occurrence than the authors and specialists lead us to infer from their writings. The subject becomes pertinent at this time, because of the controversy which is just now going on between the exponents of the different plans of treatment, each urging his particular views on the attention of the surgical world.

The following four cases from their history and subsequent success will show the efficiency of what may be considered a new operation. They were of long standing and complicated with other diseases, and therefore less favourable.

The differential diagnosis being an important factor for the successful treatment, endoscopic examination is of the utmost value. To examine the urethra not merely through the sensation obtained by the touch, but also by vision, is an advantage so self-evident, that little need be said in favour of its employment. In the cases under consideration the endoscopic examination was made.

CASE I. *Tertiary Syphilis; Indolent Ulcers on Leg; Stricture of the Urethra; Electrolysis; Cure.*—Feb. 12, 1873, Mrs. M. R., æt. 35, widow,

a clandestine prostitute, very obese, calls at the office; is suffering from indolent ulcers on foot and leg. One foot is swollen, cedematous, sore, inflamed, red, and very painful; on anterior aspect of foot and over the tibia are large and deep holes reaching down to the bone, surrounded by ragged edges and boggy tissue. The indolent ulcers discharging foul, unhealthy, ichorous matter, which burrows through the adjacent tissue. The periosteum of both tibiae is thickened, excessively painful and sensitive to the slightest touch, particularly at night. Other bones are similarly affected, especially those of the cranium. Adenitis, syphilitic dyscrasia. A minute history could not be ascertained, but she admitted primary infection, and the present symptoms are so well marked as not to be misinterpreted. She made the reluctant admission, that she has been for some time under treatment for the ulcers on her legs, which heal sometimes, but invariably break out again and again.

She passes water only in a small stream, with intense pain, and succeeds in slowly emptying the bladder only after much straining.

Examination.—The urethra is found to be contracted and of small calibre. The meatus is deeply seated, and recedes behind the pubes on the slightest touch, inverts and rolls upon itself; this, no doubt, depends, in part, upon her obesity, and therefore difficulty is encountered in the introduction of a flexible bougie. Then a whalebone bougie à boule entered only partially, and met with a hard contracted stricture, conveying a parchment feeling to the fingers and arresting the bougie at three-fourths of an inch from the meatus. The attempt to introduce a short steel sound, with the hope of dilating the stricture, failed; the manipulation caused so much pain, that no further means were employed, for the present.

Believing that the stricture was wholly dependent on the syphilitic condition of the patient, and would yield to general constitutional treatment, all local measures were deferred. A specific treatment was at once pursued, and in the course of two months she took two ounces of iodide of potassium. The ulcers were dressed with adhesive plaster and rollers; using even compression.

April 15. The ulcers have disappeared; legs are covered with healthy skin. No symptoms remaining indicating the former disease. The bones have lost their former acute sensibility, which had caused her so much suffering. She appears to be cured of the constitutional disease. On examination, the stricture of the urethra is found, contrary to expectation, to be in the same condition as before, and local treatment was commenced. The exploring bougie imparts to the finger the sensation of passing over a substance like parchment. A No. 5 sound passes into the stricture nearly one inch from meatus, and there is tightly grasped. Dilatation was perseveringly tried without any appreciable effect.

22d. Electrolysis. The positive pole of a Drescher 20-cell galvanic battery with sponge electrode was held in the palm of the hand of the patient. To the negative pole a No. 8½ olive-shaped metallic bougie was attached, the extremity of which measured number six; this was introduced into the meatus. The galvanic current was then gradually increased up to 10 cells. The bougie slowly and gradually advanced, and after two minutes passed into the bladder. Immediately afterwards a No. 11 bougie was introduced in the same manner as before, with a like favourable result. The whole operation was completed in five minutes.

26th. The patient reports herself better in every way, and is much improved, has no pain, nor does she suffer from any difficulty in micturating since the galvanic application was made.

May 14. Electrolysis. Nine cells of the same galvanic battery were used in the same manner as on the previous occasion. A No. 13 bougie enters the urethra gradually and with perfect ease. The current was kept up for ten minutes.

31st. The patient reports herself well, and expresses much gratification at the favourable result of the treatment. She is kept under observation; and on

October 31, 1874, I made a careful examination again, and found the urethra completely restored. The cure must be considered perfect, as seventeen months have elapsed since all treatment has been left off, and the patient had no relapse nor the slightest urethral trouble of which to complain.

This case has many interesting features; not the least is the fact that this patient suffered for years from syphilis. The stricture did not yield after the otherwise successful constitutional treatment; and, while all the symptoms of syphilis left her during the two months of the specific treatment, no effect whatever on the stricture was observed. It was only when galvanism was employed that the stricture of the urethra yielded. No doubt can be entertained that electrolysis, and nothing else, cured the stricture.

CASE II. Granular Urethritis; Stricture of the Urethra; Retroflexion of the Uterus; Endoscopic Examination; Galvanism; Cure.—*May 15, 1873,* Mrs. M. D., æt. 32, married three years, has one child two years of age. Menstruation, as a rule, regular, but occasionally appears prematurely, lasts six days, and is accompanied by menorrhagia. Is anæmic and of nervous temperament. Has a frequent desire to micturate, with vesical tenesmus. Complains of a peculiar pain, which appears to be due to some spasmodic action of the urethra. The urine occasionally contains blood. Sleeps well at night, and is not then troubled with any of the above symptoms. She passes water six or seven times a day in a small stream; urine is acid and free from albumen; some epithelium; nothing peculiar, however, is discovered in the urine; passes from three to four pints of urine in the twenty-four hours; pulse, 88; temperature, 101. For this very interesting case I am indebted to Dr. A. Murray of this city, who kindly sent her to me. On examination of urethra and bladder by whalebone bougie-à-boule, she feels a slight irritation but no pain.

20th. Endoscopic urethral examination. A small No. 10 tube enters the meatus, encountering a stricture at seven-eighths of an inch from its entrance. The whole tract of the urethra is in a state of irritation, and at some points granulating surfaces are discovered, which were touched by Desormeaux's solution, of one part of nitrate of silver in three of water.

24th. Urethral electrolysis with No. 11 metallic bougie at the negative pole; the sponge electrode of the positive pole held in the palm of the hand of the patient, 8 cells of Drescher's battery were used. The galvanic action produces by degrees a soothing effect by its chemical action. The bougie enters, and, after four minutes of the galvanic application, the stricture itself is penetrated, and an entrance to the bladder effected. The uterus is replaced with the uterine sound. Quinia and tonics are prescribed.

27th. Urethral galvanization as on the previous occasion. The bougie

electrode enters the urethra easily ; no pain or inconvenience is felt during the operation. Uterus replaced as before. Quinia and tonics continued.

30th. Urethral granulations at one inch and at an inch and a quarter from the meatus, to which Desormeaux's solution is applied. The appearance of the urethral walls very much improved. The patient feels better in every way.

June 6. Treatment as before. A No. 13 bougie now passes readily through the whole tract of the urethra and enters the bladder without the slightest difficulty or inconvenience.

13th. Menstruation was expected on June 2d, but has not appeared. Feels nausea in the morning, and suspicious of pregnancy are entertained. The solution of nitrate of silver was applied through a tube to the granulations of the urethra.

26th. Galvanism, bougie No. 13 passes easily along the whole of the urethra into the bladder. Granulations have disappeared ; urethra has now a normal calibre ; she reports well.

October 14, 1874, sixteen months after treatment, Dr. Murray writes:—

"After some trouble I was able to get some information regarding Mrs. D.'s case. I have been informed that your treatment made a complete cure. She has removed to Illinois and had a young son lately," etc.

CASE III. *Stricture of the Urethra ; Urethritis ; Electrolysis ; Cure.*—April 24, 1874. Mrs. M. G. M., æt. 44 years, widow, the mother of six children, had the last child eleven years ago. Seven abortions, the last fourteen years ago, at ten weeks. This lady has been my patient several years ; was treated formerly by me for dysmenorrhœa, menorrhagia, and metritis ; has enjoyed pretty good health for several years. She now complains of frequent micturition ; at one time she suffers from enuresis, at others she is afflicted with dysuria. Complaints of soreness and pain in micturating ; considerable urethralgia is present, as indicated by the burning and scalding sensation after the act. Endoscopic examination reveals an extensive inflammation along the tract of the urethral canal. The mucous lining is swollen and thickened, and of a dark red colour. Along the walls is loose epithelium, and a circumscribed ulcer is observed, very painful to the touch, and three-quarters of an inch from the meatus urinaris the stricture is seen and felt. A No. 6 bougie passes with some trouble, and transmits to the finger a feeling which very much resembles that of running over paper. The ulcer touched with Desormeaux's solution—argent. nitrat. 1 part, aqua 3 parts. No pain is caused by this application ; on the contrary, she expressed relief from it.

May 1. Electrolysis. Positive pole, with sponge electrode attached, grasped in the palm of the hand of the patient. To the negative pole is attached a bougie No. 12, and introduced into the urethra. This operation causes a little soreness, which is no doubt due to the morbid sensibility of the canal and its inflammatory condition. Nine cells were used during four minutes, when the bougie easily, slowly, but gradually passed through the stricture, and entered the bladder. It may as well be here remarked, that the nine cells were used gradually up and down. After the circuit is completed, and stands at 0, it is gradually increased cell by cell until the current produces a feeling of warmth and a slight pricking sensation. All this time the electrode is working its way through the obstruction, causing no pain, which should always be avoided. When the operation is finished, the current is decreased by drawing the slide back, until it stands at 0 again. At the expiration of the four minutes all pain

ceased, and the bougie could be freely moved in all directions without causing the slightest pain or inconvenience.

5th. Improved in every respect. Micturition not exactly normal yet; still, the desire to pass water is not so urgent as before the operation, and she retains it for a longer period. Electrolitic treatment is repeated in the same manner as on previous occasion. The No. 13 bougie was replaced by a No. 12. Eleven cells were employed during eight minutes. A marked improvement is observed; there remains but little sensitiveness at the meatus urinarius.

8th. A slight application to the sore spot in the urethra with Desormaux's solution was made through a glass tube.

12th. Same treatment as before with a No. 12 bougie; eight cells during seven minutes. She complains of a little sensitiveness at the meatus on the introduction of the bougie. After the galvanic application the catheter was introduced, causing no pain, nor the slightest unpleasant feeling. The urethra, after careful exploration, is found in good condition, and the patient feels well.

15th. The urethra and bladder, after examination, appear well. The patient complains of no inconvenience. She says that she is well, and that there is no trouble left.

June 1. The patient has not been troubled since the last *séance*. Galvanism used during five minutes, seven cells. No. 15 bougie enters the urethra and bladder with facility. Patient is well, but kept under observation.

One year afterwards enjoys good health, without having had the slightest relapse.

CASE IV. *Stricture of the Urethra; Fibrous Band and partial Urethrophraxis; Electrolysis; Cure.*—July 7, 1874. Mrs. J. C., æt. 28 years, widow. During the last two years has been troubled with difficult micturition, and now can only succeed in the erect position. The act even then is performed with great difficulty, and the water voided in a very small stream. At times she suffers from dysuria, notwithstanding the urgent desire to micturate. To all this is superadded spasm of the bladder, producing most agonizing pain. She believes that some two years ago she contracted blenorrhœa, which was communicated to her by her husband, and for which she received appropriate treatment. For a long time she was under the care of a physician, who injected into her urethra a strong solution of nitrate of silver, which gave her great pain. The difficulty has gradually increased until now, when she is almost powerless to void urine. It may be fairly asserted that the cause of this stricture was the caustic injection used. Simple urethritis may create a stricture just as well in the female as in the male; but in the former will not cause such a degree of urethrophraxis as we find in this case.

Examination.—The meatus urinarius is very small and contracted, high up in the vestibule, and can neither be seen nor defined by the touch—in fact, almost obliterated. Bougies of different sizes and forms were tried, but no entrance of the urethra could be effected. A small No. 1 could not be introduced; it was almost a case of atreturethria. Fortunately I found in my armamentarium an extra small sound, which had been manufactured for the special case of a male infant. After a long and patient manipulation an entrance was effected with it. Then electrolytic application was made in the same manner as in the previous cases. A No. 6 metallic olive-shaped bougie was pressed with its smaller extremity

against the meatus urinarius. The statement "pressed against the meatus" is meant literally, as even the pointed *small* extremity of the olive-shaped bougie could not enter the meatus. Eleven cells of the galvanic battery were employed during five minutes. The bougie made but slow progress, still it steadily advanced till it had penetrated to half an inch from the meatus, where a fibrous band was distinctly felt, stretching across the urethra, and a true urethrophraxis was made out, which no doubt acted mechanically as an impediment to the flow of urine. By degrees this obstruction was overcome by the galvanic action and electrolytic absorption. I will not attempt here to describe how such absorption is effected, as the theory of such electrolysis, the physiological effect of electrolysis on mucous linings, the therapeutical action, the method of application, experiments and cases, have already been described in a paper read before the Medical Society of the State of New York in 1874, and published in advance of the *Transactions*, in the *Archives of Electrology and Neurology* for May, 1874, to which I refer. Another distinct stricture was found at the end of the urethra, an inch and a half from meatus, just where the canal emerges into the bladder. After the operation the patient complained of soreness in the urethra, and a feeling as if there was a substance which wanted to pass off. Two days subsequently there emerged from the urethra a carneous plug, so well described by Mr. Cullier. The urethra being relieved from this obstruction, the immediate result was very gratifying to the patient, and she at once passed a large and full stream of urine, without pain or any difficulty whatever, which she had not done for years before.

13th. A little urethral soreness is complained of, a mild galvanic current is applied, five cells for three minutes, during which a No. 9 bougie with metallic end is passed through the whole extent of the urethra, and entered the bladder without the slightest impediment or difficulty.

20th. Galvanism. Bougie No. 11 enters the meatus urinarius with difficulty. By patient manipulation and the avoidance of all force or pressure, the progress of the bougie entirely left to the electrolytic action, an entrance is effected. The difficulty, which is here experienced, evidently does not depend on the want of urethral calibre, but is entirely due to contraction of the meatus. To facilitate the entrance of the urethra in this case, choice was made of the olive-shaped bougie, which is selected in cases of the female urethra, or at the meatus of the male urethra, when the progress of the instrument can be seen, and felt, and guided by the finger. The advantage lies in the extremity being pointed, and several numbers smaller than the principal part of the bougie; this small point will pave the way for the larger full size, and thereby makes more progress in one *séance*. But this very same point is dangerous in deep-seated strictures, when it cannot be guided by sight and touch, and may make a false passage. For this reason I prefer, as a rule, the egg-shaped bougies, and can operate with the latter with more safety.

August 20. Some difficulty is still encountered. The principal obstacle is at the meatus, but yields much sooner, and is overcome with less trouble, than in former attempts.

September 1. Galvanization, in the same manner as in former *séances*, with olive-shaped bougie No. 15. The remains of the fibrous bands are distinctly felt at half an inch from meatus, and obstruct the entrance of the bougie, but the obstacle is soon overcome by the electrolytic action. No further trouble is experienced. The urethral calibre is large enough

to permit a No. 15 bougie to slip through the canal into the bladder, without the slightest difficulty or inconvenience.

7th. A large sound passes easily.

Patient reports well.

The lady has been kept under observation to date, and remains well. The cure is complete and permanent of what may be called an unusually bad stricture. Five operations were necessary, before a satisfactory result could be recorded. The intervals between successive operations were shorter than the time that is usually advised in the case of males. But many of the objections against too frequent operations in males are met. Because it will be observed that a somewhat modified, and indeed a very mild current was made use of, and for a short time. It is surmised that the peculiar process of the electrolytic action, both chemical and mechanical, depends much on this mode of application of galvanism.

It is well known that the chloride of zinc has a great affinity for the albuminoids and gelatines. Now the mucous surface from which this bridle took its origin, being of an albuminous nature, the zinc-pole acted by the well-established law of chemical absorption, the albumen being absorbed, the deposit was detached from the walls of the urethra; the carnosity lay loose in the urethra, and was expelled by the *vis-à-tergo* of the urine. That this plug was the product of the electrolytic action of the galvanic battery appears to be absolutely certain.

A report of the following case of spasmodic stricture is added in order to show the differential diagnosis and treatment between true and spasmodic stricture, and also the importance of discriminating between organic and spasmodic strictures.

CASE V. Spasmodic Stricture of the Urethra; Rectal Ulcer; Endoscopic Examination; Electrolytic Treatment; Cure.—July 9, 1873. Mrs. M. K. æt. 29 years, the wife of a labourer, married four and a half years; three and a half years ago she aborted at three months; dates her trouble from her miscarriage, previous to which she enjoyed invariable good health. Before she came under my notice, she had been under the treatment of some eminent gynæcologists, for oophoritis, pelvic abscess, cystitis, etc. She now complains of pain in and along the whole urethral canal, particularly after micturition. There is complete retention, after scanty menstruation ceases. She passes but little urine, about one quart in three days, and during the last twelve hours three ounces is the whole amount she has passed. She is nervous and hysterical; bowels are nearly regular; urine almost normal, acid reaction, no albumen; phosphates are present, but in small quantity, a little flocculent deposit in phial. Microscopical examination reveals nothing abnormal. Ordered a diuretic emulsion.

She thinks, that the last medicine caused a desire for frequent micturition, and she has to void it every ten minutes. She discontinues the medicine, enuresis is arrested, and she micturates without difficulty. The previous symptoms are gone.

Examination.—Uterus normal in every respect. The sound meets at first with a little spasmodic resistance, but in a few moments enters the uterine cavity in a normal direction up to two and a half inches. On

examination some capillary congestion is discovered at the meatus urinaris, which is found red and highly sensitive. The calibre of the urethra is narrowed, the sound is spasmodically grasped on its entrance. After dilatation, a glass tube No. 10 enters with some difficulty, causing a little bleeding. Light thrown into the urethra reveals an inflammatory condition of the parts. No granulations are discovered, but a circumscribed spot is seen denuded of epithelium. This was touched with Desormeaux's solution, causing no pain or inconvenience.

21st. The catamenia have appeared

26th. Patient is very hysterical; complains of a multiplicity of ills, viz., throat, irritation of the bladder, flatus, rectal pain, violent lumbago, etc. etc. Urethral galvanization. Bougie No. 11 as negative pole, enters without the least difficulty at once. As soon as the galvanic current entered the body, all pain ceased at once.

31st. Increased hysterical symptoms. Examination with anal speculum reveals small internal hemorrhoids.

August 2. Endoscopic examination. A large rectal exploring tube entered the rectum with ease up to $3\frac{1}{2}$ inches, at which distance it is arrested. There the patient complains of pain, and, to use her own expression, says: "Ah! doctor, I am confident that there is the origin of all my trouble." The ocular inspection per endoscope reveals an ulcer at $3\frac{1}{2}$ inches from the sphincter ani, on the left side of the rectum, which on the slightest touch bleeds. Desormeaux's solution of nitrate of silver applied to the ulcerated surface, which immediately controlled the bleeding. No pain was caused by the application; on the contrary, relief is at once experienced.

12th. She reports herself well. On examination the rectum is found in a healthy condition; the ulcer has disappeared; so has the stricture of the urethra. The patient is much gratified, as she considers herself perfectly cured.

The value of endoscopic examination is here proved beyond a peradventure.

This stricture was spasmodic, and wholly dependent on the pathological condition of the rectum, because, it will be observed, as soon as the ulcer was discovered, and the source of irritation removed by appropriate treatment, all the bad symptoms ceased, and immediate relief followed. One point should be noticed, viz., the soothing effect of the galvanic current. Galvanization has powerful anodyne properties, as evinced in the above case, all pain having immediately subsided as soon as the patient came under its influence.

While it is conceded that the principal effects of electrization are tonic and stimulant, nevertheless there can be no doubt that this agent may be classed among the calmants and sedatives.

The early writers on electro-therapeutics speak of its sedative properties. The experiments of Onimus, Le Gros, Althaus, Meyer, and others have confirmed this. Hiffelsheim concedes the tonic and stimulating effect of electrization, but asserts and maintains that the current may become sedative in the same manner as those remedies which are classed among stimulants and tonics under certain circumstances become sedatives. The

further deduction drawn from the preceding case is, that galvanism here acted as an anodyne or sedative; that its therapeutical effect was such as to render it nearly positive; that the sudden and immediate relief from pain may be ascribed with professional certainty to its soothing action. Of course it is not to be understood that *all* ulcers will become amenable to the same treatment, nor heal by the same means; some will assume an indolent character, depending on many causes; still, may not the principal reason be found in the fact that the pain which they produce acts as an irritant on the margin of the ulcerated surface, which is thus kept in constant involuntary vibration, a condition observed in the ulcerated surface of the sphincter or anal fissure. In these cases opiates or sedatives are exhibited in small doses. These accomplish the same thing as galvanism, by giving rest to the nervous system. The pain being relieved, the healing of the ulcer is certain.

Galvanism here is both sedative and soothing in its action on the ulcerated surface.

Conclusions.—By grouping and recapitulating these cases as they appear in my case-book, the following conclusions may be drawn.

Five cases of stricture of the urethra in the female, viz. :—

One spasmodic stricture (not a stricture in reality), Case V.

Four real organic strictures, of which two were inflammatory, Cases II. and III.; and two were fibrous, Cases I. and IV.

As to causation, as far as the history of each case could be ascertained, it was as follows :—

Case I. was due to syphilis.

Case IV. was due to irritating injection in gonorrhœa.

Case II. was due to granular urethritis, a sequel of confinement, and probably aggravated by the displacement of the uterus.

Case III. was due to urethritis.

In Case V., the spasmodic stricture was due to reflex irritation, induced by ulcer of rectum.

The *seats* of the strictures were respectively: at the meatus—one-half inch—three-quarters of an inch—seven-eighths of an inch distant from the meatus; one case involving almost the whole urethra. These facts seem to prove that a stricture in the female urethra may appear in any part of the canal.

In the measure of severity they range from the slight diminution of the calibre up to almost complete atresia.

Now as to the *treatment*. It is claimed that electrolysis, and nothing else, cured the patients with organic stricture whose cases are here under consideration. Each case had received its appropriate treatment, and failed. When electrolysis was called upon, it succeeded. It is, therefore, absolutely certain that the last was the only factor which can be taken into consideration, and to which these cures can be reasonably ascribed.

This agent, tried by the severe tests and scrutiny of experience in strictures of the urethra, takes, therefore, a prominent place among our most useful agents. Indisputable statistical facts constitute the data upon which the opinion favourable to that kind of treatment has been formed. In three of the above recorded cases electrolysis was the curative agent which accomplished what specific medication had failed to do. Now, it might be argued, and that with some show of reason, since the female urethra is easily dilatable, that simple dilatation, if used diligently, would accomplish more and in a better manner than is claimed for electrolysis.

To this argument there are many answers; but the most perfect would be, that while the urethra in its *normal* state is easily dilatable, and in many case we might be able to introduce the finger deeply, even reaching the fundus of the bladder, it is quite another affair when the urethra is in an abnormal condition, such as inflammation, fibrous bands, and even atresia, in which the dilatation becomes impossible. However, while objection to the treatment of strictures of the urethra by galvanism may be made, and will, of course, receive all the consideration to which they may be entitled, it nevertheless illustrates, in the cases here recorded—

1st. That other means had been tried and failed.

2d. That electrolysis did cure strictures varying in calibre from No. 1 to No. 8, effectually and permanently.

The certainty of the permanence of cure depends on the fact that the patients so treated were kept under observation, have remained well up to this date, and none have suffered a relapse.

Galvanism as a therapeutical agent is daily receiving a considerable amount of favourable consideration from the profession; still it has scarcely obtained, I think, the credit it really deserves. Much of this appears to depend on its use in cases where experience has shown it to be ill adapted for its exhibition, and where failures are recorded, in all probability the cases were improperly diagnosed or selected.

In conclusion, no apology need be offered for bringing a class of troublesome ailments to the consideration of the profession, which certainly are of more frequent occurrence than the scarcity of recorded cases would lead us to suppose; and if this paper has added a practical thought to the general knowledge of that distressing pathological condition called stricture of the female urethra, or if it should induce others to investigate the subject, I am amply rewarded.

No. 145 WEST 47th ST., NEW YORK, May, 1875.

ART. XVII.—*Double Popliteal Aneurism; Ligature; Flexion.* By EDWARD T. CASWELL, M.D., Surgeon to the Rhode Island Hospital.

THE following case presents some points of interest, and may, therefore, be worthy of record. The early history is not to be ascertained with definiteness:—

John H., Irishman, single, dairyman, aged 28, was admitted to the hospital September 6, 1874, with a pulsating tumour of the size of an orange in the left popliteal space, and another as large as a horse-chestnut in the right. The patient had been aware of the existence of a "bunch" under each knee for an indefinite period. They had not produced pain, nor had they caused him any inconvenience. He cannot identify any time or circumstance when his attention was first directed to them. On July 3, 1874, at 11 A. M., as he was driving cows to pasture, he felt a sudden severe pain in the left knee, causing him to sit down on the ground. On examination he found a bunch, the size of a large marble. He got home, and in two hours was seen by my colleague, Dr. Millar, who found the tumour in the left space larger than an egg, and one very much smaller in the right. The left leg was bandaged from the foot, and flexed upon the thigh to such a degree as would interrupt the circulation, without completely stopping it; and cold applications were made to the knee. This treatment seemed satisfactory. The size of the tumour diminished, and the pain disappeared. In two weeks he was able to be about his house, and dismissed his physician. He resumed work for a month, feeling no pain in the limb. One night, in the third week in August, he went to bed feeling as well as usual, and was aroused at 2 A. M. by an intense, heavy pain in the left knee, which continued until 6 A. M. He found he could not get up. He was again seen by Dr. M., who discovered that the tumour "filled" the popliteal space. The leg was again flexed upon the thigh, as before, without, however, producing any amelioration of the pain, or diminution of the tumour. In this condition he was admitted to the hospital, under the service of Dr. Carr.

The record states, that up to the 9th of September the only treatment was bandaging from the toes to the trunk, and cold applications, which at first seemed to relieve the pain. Compression upon the artery was then made by Briddon's compressor, with the instruction to change the position of the pads frequently. The instrument was with difficulty kept in place, and he was unable to bear the pain which it produced if it was applied for any length of time. Large anodynes were administered. He continued in this way, without further interference, until September 24, when, as the tumour was growing larger, an attempt was made to produce partial compression by the same instrument. This he could bear for several hours at a time, but it seemed to produce no favourable effect upon the aneurism; and the œdema of the foot, which had shown itself a few days previously, was on the increase. The attempt to cure it by compression, either partial or complete, was therefore abandoned; and on the 28th of September the femoral artery was tied at the lower part of Scarpa's triangle by my predecessor in service, Dr. Clapp, as Dr. Carr was ill at the time. After the artery was tied all pulsation in the tumour ceased. The temperature of the foot and leg diminished materially after the lapse of three or four hours, and hot sand bags were applied. Mor-

phia was given in sufficient quantities to control the pain, which was now referred partly to the popliteal space, and partly to the line of the incision. The wound healed by the 5th of October; the ligature came away on the 24th of that month. The tumour had not diminished in size to any extent since the first two or three days after the operation. The measurement in circumference over the patella was $18\frac{1}{2}$ inches.

I will not follow the details of the hospital record; suffice it to say, that the tumour did not diminish materially in size. There was a feeling of semi-fluctuation, and the exploratory trocar was introduced two or three times at intervals, with and without the aspirator, and brought nothing but a little sanious fluid. The pain was severe, and abscesses formed in the leg and on the heel, which were opened. On the 31st of December the tumour broke, and discharged about two ounces of bloody fluid; it had previously diminished in size, so that the measurement was $17\frac{3}{4}$ inches.

The next day I entered upon my service, and found thick, grumous matter escaping from the opening. By the 5th of January this discharge was mingled with pure pus and clots of blood. The patient's condition was very unpromising; he was much emaciated, and had night-sweats. The opening was enlarged, and the discharge was very profuse, and of pure pus. Under supporting treatment, however, he began to improve, and gradually the tumour disappeared. He regained health and strength, so that by the middle of February he was able to be about the ward on crutches, the knee and ankle of the left side being quite stiff from the long confinement.

After he had been about the ward for a week or ten days he drew my attention to the right leg, and I found that the tumour in the popliteal space, which had not been the source of any discomfort, and hitherto had not altered since his entrance into the hospital, had now increased to the size of a hen's egg, was pulsating, and gave the characteristic bruit. On the 4th of March I ordered Briddon's compressor to be applied, but the instrument did not work well, the pads slipping from their place. The next day I flexed the leg upon the thigh to the full extent, but this could not be borne, and on the 6th, after bandaging from the foot up, I flexed the leg so as partially to cut off the supply of blood. This was done for two hours at a time, two or three times in the course of the day. He said he could bear that degree of pressure any length of time. The pulsation had diminished considerably by the next day, and the treatment was therefore ordered to be continued persistently for forty-eight hours. At the expiration of half that time all pulsation in the tumour had disappeared, and it did not recur. The limb was, however, retained in the same position for the appointed time in order to guard against recurrence. The tumour diminished in size, and by the 20th of March the measurement in circumference was $\frac{2}{3}$ of an inch less. It continued rapidly to improve.

The long confinement in bed had produced, as I have said, great rigidity of the knee and ankle of the left leg. The knee yielded readily to the various methods employed to render it limber, but the ankle resisted the most persistent efforts with shower-baths, warm applications, etc. etc. The heel was drawn up, forming a pronounced talipes equinus, the foot being completely extended. On the 27th of March I cut the tendo-Achillis, and four days after placed the limb in a plaster-of-Paris splint. He

did well, and on the 3d of May was discharged cured. He has resumed his former occupation, suffering no inconvenience whatever. The tumour in the right side has nearly disappeared.

PROVIDENCE, Aug. 13, 1875.

ART. XVIII.—1. *Labour without apparent Liquor Amnii; Delivery by the Forceps.* 2. *Pernicious Jaundice; Umbilical Phlebitis and Peritonitis; Post-mortem Appearances.* By F. A. BURRALL, M.D., of New York.

CASE I. A married American lady, about twenty-eight years of age and a primipara, fell in labour on the 1st of last November, the vertex presenting in the left occipito-anterior position. The uterine contractions became marked at nine o'clock in the evening, and I was sent for during the night. After having satisfied myself concerning the presentation of the vertex and apparent integrity of the membranes, I awaited the discharge of the amniotic fluid with the interest which usually attaches to that occurrence. The contractions were good, and, for a time, the progress was satisfactory. In the morning I left my patient for awhile, expecting to find the labour considerably advanced on my return. In this I was disappointed, for notwithstanding some progress seemed to have been made in my absence, there had been apparently no rupture of the membranes, although the contractions had been active. A cloth applied to the genitals by the nurse, when the patient had risen and sat upon the closed-stool, remained quite dry. At about two o'clock the head was in the lower part of the excavation, but for some time had made no progress, and the patient was becoming anxious and discouraged. Examinations revealed a fluctuating tumour, which conveyed to the touch the sensation of the amnion filled with its fluid, and it seemed very clear that there had been no rupture. The pelvis was ample, and I endeavoured without success to break the membranes with my nail. I was deterred from using any sharp instrument for this purpose, as it seemed to involve some risk, and I thought I felt something like *the fine hairs of an infant* upon the presenting part, which was, however, very resilient, and resembled closely the bag of waters. The vagina was not dry, but the condition of the patient made me anxious that the labour should not be unduly prolonged, and I, therefore, at about two o'clock P. M., with the assistance of Dr. W. H. Kemp, applied the forceps, and delivered my patient of a healthy female child, which weighed about eight pounds. The head was small and hairy, and the delivery quite easily accomplished without laceration of the perineum; no membranes were visible during the operation. A moderate gush of blood followed the extraction of the child. The placenta and membranes followed in about a quarter of an hour after the birth of the child. There was nothing very marked in connection with convalescence.

This case is interesting from the fact that the quantity of liquor amnii present was exceedingly small, and a very elastic caput succedaneum gave the sensation of the bag of waters. It seemed to me as if an unusually

tough amnion were interfering with the progress of the labour, as I did not see any other satisfactory cause, and had it not been for the hairs which I thought I perceived upon the presenting part I might have made more decided efforts to rupture the supposed membranes.

I was afterwards informed that a near connection of my patient had passed through a similar labour in which there were "no waters," and one or two physicians to whom I have mentioned this case have met with an analogous experience in their practice; others have regarded it as novel and interesting.

Authorities speak of the quantity of amniotic fluid at term as very variable, but in no work which I have seen has there been a particular mention of the circumstance, that the amount of waters may be so small as to leave the physician doubtful whether they have escaped.

Under ordinary circumstances this would not be of much importance, but in delayed labour where a resort to instruments might be contemplated it would be a matter of decided interest to learn whether rupture of the membranes had or had not occurred. At such a time the perception of the fine hairs upon the scalp of the child would be a diagnostic mark between the bag of waters and the caput succedaneum.

CASE II. On the 4th of February, 1875, I was requested to see a female nursing, aged sixteen days, who was in the maternity department of the New York Infant Asylum. The mother was apparently healthy, although she had been suffering from albuminuria, and notwithstanding she had lost four children, I could not discover that their mortality was due to hereditary predisposition. I found the child with diarrhœa, jaundiced, and drooping. Very small doses of mercury were given, to which minute doses of quinia were subsequently added. Wine whey was also administered.

Feb. 7. There is no improvement; tongue dry; gums disposed to bleed. The ulcer left by the separation of the umbilical cord has never healed. Abdomen swollen, with flatness on percussion over its right inferior portion.

The child died at mid-day of Feb. 7th, and the subsequent *post-mortem* examination was made by Dr. B. F. Dawson, who has furnished me with the following notes:—

Autopsy.—Rigor mortis well-marked; skin and conjunctiva showing intense icteric discoloration; abdomen somewhat distended, and resonant throughout. The seat of the umbilicus occupied by an ulcerated circular depression about half an inch in diameter, surrounded by a greenish-brown discoloration of the skin, varying in intensity of colour, to the extent of half an inch. The ulceration covered with a grumous, very offensive secretion. From the ulcer there was a darker marking of the skin over the course of the umbilical vessels, which on being lightly pressed upon was found to be pathologically softened, and caused a freer discharge of a very offensive purulent ichor. On opening into the peritoneal cavity signs of general acute peritonitis were evinced by a soft inflammatory exudation, covering the viscera, and completely filling the pelvic cavity, in which space the intestines and bladder were matted together by the purulent exudation, which was of the consistency and colour of soft butter.

There were also about four ounces of fluid in the pelvic cavity. On examining the peritoneal surface of the abdominal parietes beneath the umbilicus it was seen to be of a gangrenous discoloration, softened, and the vessels of the surrounding tissue intensely injected. This condition extended along the course of the umbilical vein, which was very greatly distended and apparently filled with fluid. Icteric discoloration of the viscera was slight, excepting the liver, which was intensely discoloured. The liver, umbilical vessels, and that portion of the abdominal parietes occupied by the ulcerated umbilicus, were removed. Examination showed the gall-bladder to be distended with a colourless fluid, evidently mucus secreted by the bladder. On passing a probe from the ulcerated surface of the umbilicus in the direction of the umbilical vein, it was found to pass readily throughout the extent of the latter. On opening the vein its walls were found thickened and softened, and its contents composed of a purulent fluid, which was shown to be pus by the microscope. A careful examination of the tissue of the liver failed to show any purulent deposits. The contents of the gall-bladder were accidentally lost, consequently an examination was not made.

On opening into the pleural cavities the right was found to be the seat of a pleuritis, with apparently purulent exudation.

No other organs were examined.

A yellow discoloration of the skin is, as is well known, a frequent accompaniment of very early infancy. It is of few days' duration, and as it disappears the skin resumes its normal hue. Steiner says that "about two-thirds of all children give more or less distinct indications of jaundice within the first week of life, about 6.6 per cent. more of the cases occurring in males than in females, and the affection being on the whole more marked among the former. . . . It is noteworthy that the discoloration is very frequent over the region of the pelvis, and that the early passage of the meconium or its retention does not seem to influence its production."¹

He also says "it may be due to some blood alteration, and in this case is almost always pyæmic, having its origin in umbilical phlebitis." There is little if any question that the present instance was one of the characters referred to by Steiner, known as pernicious jaundice.

Since the occurrence of this case, the custom has been established in the Asylum of dressing the cord with a solution of carbolic acid in glycerine, for the purpose of averting septic absorption.

With regard to the treatment of developed pernicious icterus, Vogel regards it as eminently unsatisfactory, for he writes, "so far as I am aware, there is not one case of recovery to be found in the whole medical literature."² In the present instance none of the agents which were administered to meet the apparent necessities of the case seemed of any particular avail.

¹ Diseases of Children, p. 264.

² Diseases of Children, p. 72.

ART. XIX.—*A new Optometer for Measuring the Anomalies of Refraction and the Field of Vision.* By S. D. RISLEY, M.D., Chief of the Dispensary for Eye Diseases at the Hospital of the University of Pennsylvania. (With four wood-cuts.)

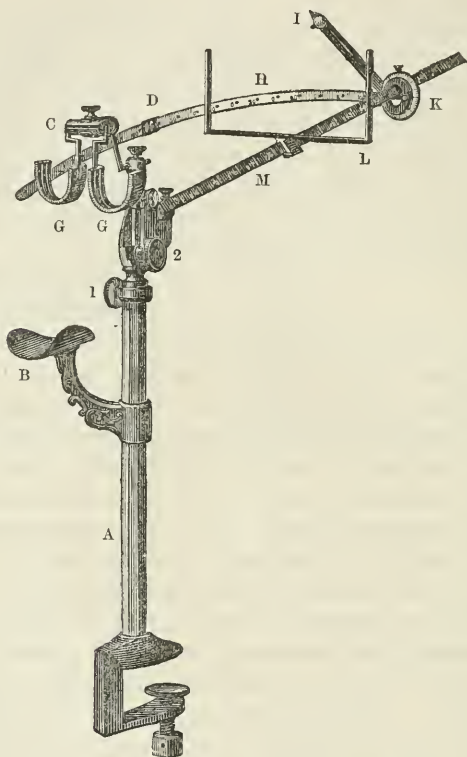
THE anomalies of refraction and the disturbances of accommodation and convergence depending upon them furnish a very important chapter to the ophthalmologist. A very large proportion of the annoyances or positive and severe suffering, from which patients seek relief, grow directly from certain anatomical departures from the normal eyeball, which disturb the proper relation between the refracting apparatus and the perceptive layer of the retina. These conditions may be present in very slight degrees, causing but little if any annoyance, or so great may be the defect as to render comfortable or accurate vision impossible.

The selection of glasses which shall correct these optical defects becomes then a matter of the first importance, and demands at the hands of the oculist a careful determination of the existing refractive condition of the eye. To accomplish this end, much time and patience are required, even with the aid of the best appliances. In the more frequently occurring defects, as *myopia* and *hypermetropia*, the problem is comparatively a simple one. Then, too, in these an approximate correction will often prove all that is necessary; but when these conditions are associated with astigmatism, or when the latter alone is present, the problem becomes more difficult of solution. In astigmatism nothing less than a full correction promises, with any certainty, relief from its annoying or painful consequences. Numerous methods have been devised to give increased facility, and to insure accuracy in determining the degree of this anomaly, and have been employed wholly or in part by ophthalmologists in their daily routine of practice. Necessarily these have been only variations and more or less convenient applications of certain well-known principles. The method most used in this country, is the one devised by Dr. Green, of St. Louis, Mo. (vide *American Journal of the Medical Sciences*, Jan. 1867). It would seem, indeed, that, as a series of test objects for indicating the influence exerted by the astigmatic eye over parallel rays of light, nothing further is to be desired.

In order to facilitate the ready and accurate application of the various methods in use, I have devised the optometer, described in the following pages, and after a year of constant use of it, I recommend it without hesitation to others labouring in the same field. No new principle is involved in the apparatus, but, in its present form and convenient adaptation of various methods and test objects, I believe it to be unique. As seen in Fig. 1, it consists of a stand A, twelve inches high, which clamps by a capstan

screw firmly to the table.¹ To this is attached a movable chin rest B, a pair of graduated semicircles C, with their concavity upward for the reception of trial glasses, stenopaic slit, etc., a graduated triangular bar M, 20'' long, supporting a carrier L, which moves freely throughout its length, and a perimeter H, which may be adjusted and removed at pleasure.

Fig. 1.



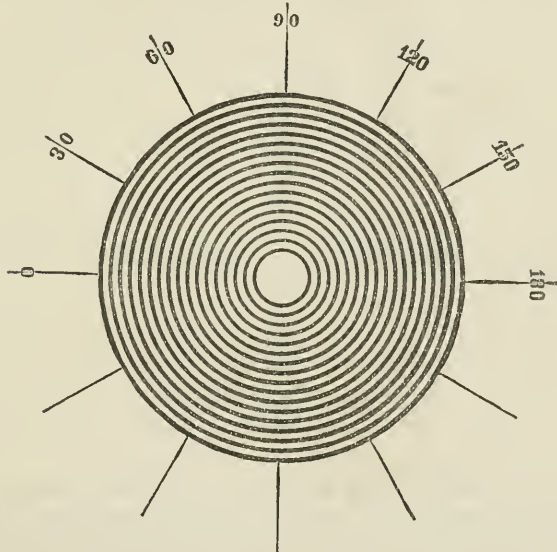
A. Stand. B. Chin rest. C. Holders for test glasses, etc. M. Carrier bar. L. Carrier. H. Perimeter. 1. Fixation point. D. Slide. K. Perimeter head and graduated scale. G G. Semicircles showing three grooves for glasses, etc. 1 and 2. Milled head screws.

The stand is a hollow cylinder admitting a brass rod which moves up and down within it freely, thus extending the height of the stand to eighteen inches. It can be fixed at any point by the screw (1). To this rod is firmly secured a brass quadrant, to the upper anterior part of which is attached the bar M. The quadrant moves on a pivot throughout its extent, so that it gives to the bar M a downward movement through 45°. It may be arrested at any desired point by the milled-head screw (2). To the posterior part of the quadrant is attached the holders C. These are

¹ When desired a stand in place of the clamp is furnished.

so constructed as to permit the most varied adjustment in order to centre the glasses before the eyes, or they may be removed entirely, which is required when the perimeter, hereafter described, is in use. In the concavity of the semicircles there are three grooves for the reception of glasses, etc., and both their anterior and posterior surfaces are graduated in degrees corresponding to the Nachet test frames. One or more glasses may be placed in the semicircles at the same time, and the distance at which they are centred read off on the holders, at c.¹ The cylindrical lenses can be readily rotated, and the direction of the axis read off on the frame. The bar M is graduated in fractions of an inch commencing with the posterior surface of the holders. The carrier moving upon it is designed to bear a series of cards containing the test-types of Snellen and of Jaeger, and numerous other test figures. Also an opaque carrier plate with a circular

Fig. 2.



opening in its centre two and a half inches in diameter, the lower half of which is graduated in degrees to correspond to that upon the semicircles. Behind the circular opening fits a piece of ground glass, which, when turned toward the light gives an illuminated background. The plate is designed to receive and permit the free rotation of a number of thin brass disks with test figures cut in them.

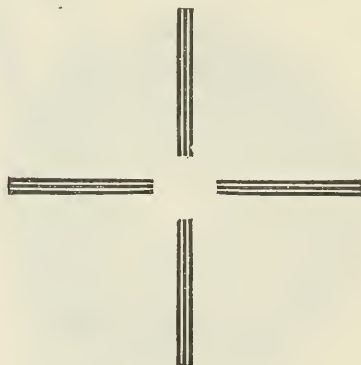
The tests for astigmatism recommended for use in this instrument include the valuable series of Dr. Green² (the printed figures and those in-

¹ In constructing these holders I am indebted for valuable suggestions to Mr. Samuel L. Fox, of the firm of Queen & Co., Opticians, Philadelphia.

² Trans. American Ophthalmological Society, 1869.

tended for back illumination are reduced for use at 12'' instead of 20', as originally designed); the concentric circles of Otto Becker, also reduced for 12'' (Fig. 2); a cross of wires, perhaps the most valuable of the entire series, consisting of a rim of brass, with milled edge to facilitate its rotation in the carrier plate, with two groups of five wires each, stretched 1 mm. apart, crossing the centre at right angles. Another valuable test is furnished by a metal disk with lines cut through it, as shown in Fig. 3, for back illumination. Where there is much diminution of acuity of vision I have found this disk a valuable aid. A metal disk, with central perforation, intended to furnish a bright point of light, will also be found useful. These disks are each $2\frac{3}{4}$ '' in diameter, and their distance from the eye is read off on the graduated bar. To the holders are adapted a stenopaic slit and a modification of Thomson's disk, utilizing the experiment of Schreiner. (Vide *Am. Journ. Med. Sci.*, January and October, 1870.) Each has a milled edge to facilitate its rotation in the holders.

Fig. 3.



In using the instrument, one or more of the following methods may be employed quite indifferently as regards their respective merits. Usually it will be found desirable to use more than one method for the purpose of verifying first conclusions. The determinations are all made at an artificial far point—10'' or 12''—and with the eye thoroughly atropinized, when a careful and accurate measurement of the refraction is desired. Without this, except in aged people, there can be no assurance that the result obtained is a correct one, whether the determination be made at 12'' or 20'. Without the use of atropia I prefer to rely upon determinations made with the ophthalmoscope in a moderately darkened room, than upon the most careful trial with glasses. At first I felt some hesitation in relying upon corrections made at 12'', but after I had in numerous cases verified them by repeated, independent determinations at

20', I gained confidence in this method, and now without hesitation prescribe the correcting glass so determined.

Before using the atropia, the range of accommodation is determined either with the wire cross, point of light, or by the test-letters, and the farthest and nearest point recorded. After paralysis of the accommodation by atropia $+\frac{1}{12}$ is placed in the holders before the eye, and the card containing No. 1 or No. 2 of Jaeger's test-types placed in the carrier, and the distance at which it is read (if it can be read at all) noted. If they cannot be read at any distance (very high degrees of myopia or hypermetropia excluded), one or more of the astigmatic test-cards is dropped before the eye in the carrier to ascertain if the inability to read depends upon the presence of astigmatism. The letters are read, however, but not at 12'', the focal distance of the glass in the holders. If Jaeger No. 1 can be read first, or the wires of the optometer are first distinctly seen, *e. g.*, at 8'', we have myopia (M) $=\frac{1}{8}-\frac{1}{12}=\frac{1}{24}$, and it is found that with a concave 24'' focus glass ($-\frac{1}{24}$) Jaeger No. 1 can now be read at 12''. If, however, the point of distinct vision is found to be, *e. g.*, at 16'' instead of 12'', we have hypermetropia (H) $=\frac{1}{12}-\frac{1}{16}=\frac{1}{48}$. We now find that with a convex glass 48'' focus ($+\frac{1}{48}$) Jaeger No. 1 can be read at 12''. This in simple cases of myopia or hypermetropia is sufficient. It may be verified, however, by the point of light viewed through Thomson's double perforated disk placed in the holders, when the double images seen will be fused by, in the one case $-\frac{1}{24}$, in the other by $+\frac{1}{48}$, if these glasses represent truly the refractive condition of the eye.

Astigmatism being present, its existence and the direction of the principal meridians of curvature will at the same time be detected by placing in the carrier one or more of the numerous test figures, employing either the cut metal disks or the printed figures. The carrier is placed at a point too remote for distinct vision, and one of the test figures being placed in it, is steadily moved toward the eye and the patient desired to indicate which of the diameters of the figure first comes into view. With the printed figures this will be told by some of the lines appearing black and distinct while the others, usually those perpendicular to the first, are still hazy and indistinct. The first line will be perpendicular to the meridian of most favourable corneal curvature. If the concentric circles be used (Fig. 2), the dark or distinct line through the figure will be parallel to the meridian of most favourable curvature. If the cut disks are used, the meridians are selected by the distinctness with which the radiating lines are seen, and the degree read off on the scale below them, attached to the carrier-plate. In the disks containing the radiating lines of perforations or the cross, none of the minute holes are seen as round points of light, but with indistinct outline, which for each individual hole is more or less irregularly oval, the long axis of each pointing in the same general direction. It follows that in some one of the radi-

ating lines, or if it is preferred to rotate the arms of the cross of holes before the eye, it will be found in the direction of some meridian that these oval points of light are ranged side by side, while at the meridian perpendicular to this they are arranged end to end, and if the anomaly be considerable may even be run together so that the holes blend with each other and form a continuous line of light which will be perpendicular to the meridian of most favourable curvature. Having in this manner discovered the principal meridians, it now remains to determine the refraction in each. This may be done in a great variety of ways with the test objects, etc., furnished with the optometer. The following will be found quite sufficient. The wire cross is placed in the carrier beyond the limit of distinct vision, with its groups of wire parallel with the principal meridians. (The meridians may often be best picked out by revolving the cross before the eye.) It is now moved slowly toward the eye. The group of wires which stand perpendicular to the meridian of most favourable curvature will come first into view. The distance at which they are most distinctly seen is now noted, and the distance for the second group sought and noted. The difference between these distances and $12''$ —the distance at which an emmetropic eye would see them best—gives the defect for each meridian, and their difference the amount of astigmatism; *e. g.*, with $+\frac{1}{12}$ before the eye—principal meridians proved to be vertical and horizontal, vertical wires of the cross seen at $16''$, horizontal wires at $12''$. By this there is shown to be in the horizontal meridian of the cornea $H = \frac{1}{12} - \frac{1}{16} = \frac{1}{48}$; vertical meridian emmetropic; hence simple hypermetropic astigmatism. In high degrees of hypermetropia it is sometimes desirable to use a stronger glass than $+\frac{1}{12}$, *e. g.*, $+\frac{1}{6}$ or $+\frac{1}{8}$; so that the far point shall not be further than $20''$ from the eye—the length of the carrier bar. The same may be done with either of the test figures, but the wires usually are most satisfactory.

The results thus obtained may also be found by one or more of the following expedients:—

Place in the holders the stenopaic slit parallel to one of the meridians, and Jaeger No. 1 at the artificial far point— $12''$. The glass with which the type can be most easily read is the measure of the refraction for that meridian, and in the same manner the second meridian may be determined; the difference between the two giving the degree of astigmatism. It may be still further verified by means of Thomson's double perforated disk and point of light. The glass which fuses the double images is the measure of the anomaly for any given meridian; indeed this may be used first, and it will be found rarely necessary to depart from results thus obtained. A single case selected from practice will serve to illustrate the foregoing.

L. E., æt. 18, *mixed astigmatism in right eye, myopic astigmatism in left*, $V = \frac{20}{cc}$ each eye. o. s., $+\frac{1}{12}$ before the eye. Vertical lines were seen

at 8'', horizontal at 6'', showing in the horizontal meridian $M = \frac{1}{8} - \frac{1}{12} = \frac{1}{24}$, in the vertical meridian $M = \frac{1}{6} - \frac{1}{12} = \frac{1}{12}$, or $M = \frac{1}{12} - \frac{1}{24}$, and $Am = \frac{1}{24}$. It was then found, that, with stenopaic slit placed before the eye vertically, and test-types at 12'', the weakest glass with which Jaeger No. 2 could be read was $-\frac{1}{12}$; with slit horizontal $-\frac{1}{24}$ was sufficient. The second method thus verified the results of the first. $-\frac{1}{24} \odot -\frac{1}{24}$ cyl. axis horizontal was now placed before the eye, with which Jaeger No. 1 was read without difficulty at 12''.

O. D. answers with astigmatic figures confusing. Cross placed at 16'', wires best seen vertically. Not so distinctly when rotated to right or left. Not so clear nearer or further than 16''. Horizontal wires seen only at 5 $\frac{1}{2}$ ''. Thus was shown in the vertical meridian $M = \frac{1}{6.5} - \frac{1}{12} = \frac{1}{10}$, in the horizontal meridian $H = \frac{1}{12} - \frac{1}{16} = \frac{1}{48}$, or Amh , corrected by $-\frac{1}{10}$ cyl. ax. horizontal $\odot + \frac{1}{48}$ cyl. axis vertical ($-\frac{1}{10}$ cyl. | $-\frac{1}{48}$ cyl.). This result was then verified by the stenopaic slit and trial glasses, and by the point of light.

This point of light, doubled by Thomson's disk, is used at 12'', the double image being fused by the correcting glass, or the point of light may be moved with the carrier back and forth until but one image is seen, which will be at the distance for which the eye is focussed. The difference between this and 12'' is the anomaly of refraction.

The ability to read No. 1 of Jaeger's types with $+\frac{1}{12}$ at 12'', does not necessarily prove that $V = \frac{20}{xx}$. Many persons with sharpness of vision

no greater than $\frac{1}{12}$ are able, even without the increase in size of the image afforded by $+\frac{1}{12}$, to read Jaeger No. 1 at 16'', or in strong light at 18'', or even 20''. Again, even with an imperfect image formed upon the retina, great familiarity with the form of the letters will often make it possible to read Jaeger No. 1, or to name the letters of No. xx of Snellen's types at 20'. So that in relying upon letters or reading alone as a test for the correction of the defects of refraction, there is great liability of being satisfied with only an approximate correction. A far more rigid test is the point of light or the wire cross. When the point of light loses the star-like radiations, and is seen as a round clear-cut hole, or when the individual wires in the cross are sharply seen, with no tendency to doubling or blurring of their edges, the anomaly is, without doubt, corrected.

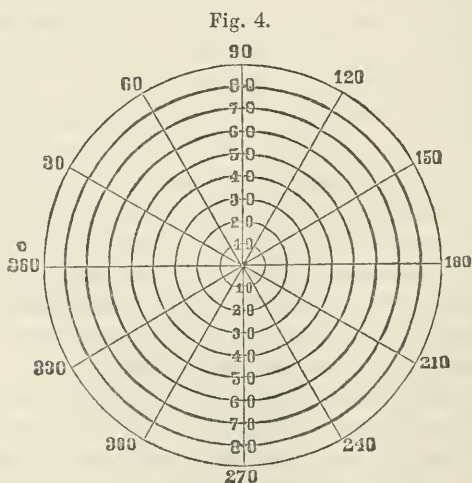
As a test for acuteness of vision, the "*internationale sehproben*" of M. Burckhardt are more reliable than letters. I have found that to count the dots in his series at the required distance is much more difficult than to read the Latin text subtending the same angle.

In determining the degree of muscular insufficiency, the optometer has proved a great convenience. The point of light is placed at 12'', and prisms employed in the usual way, but are used more conveniently, as one or more can be readily placed in the holders at the same time. The point of light is better than the dot and line, or than any ordinary object held in the hand, and avoids the annoyances which attend the use of a wax

candle, or other source of light. Insufficiency for distance is determined by directing the gaze to a point of light in the window, furnished by placing over the window-pane a piece of binder's board with a perforation $\frac{1}{4}$ " in diameter in its centre, with white tissue-paper over it.

Inability to converge for an artificial far point has hardly presented itself as an objection, for the reason that the determination has invariably been made for each eye separately; a tendency to diplopia only appearing, when the patient was requested to read at 10" or 12" with the correcting glass over both eyes, which was readily remedied, except when marked insufficiency of the internal recti muscles had before existed, by slightly decentering the glasses, which was readily accomplished with the adjustable holders.

A very valuable feature of the instrument is the perimeter H, Fig. 1. It may be adjusted, as seen in the figure, upon the bar M at pleasure, and when not in use removed. When the perimeter is in use, the carrier and holders are to be removed. It consists of a quadrant of a circle, the radius of which is 12". It is shown at H in Fig. 1. When adjusted, it is placed on the bar M at 12". The mechanism for adjustment allows the rotation of the quadrant around the bar as a fixed point. In its rotation it moves over a graduated circle at K, in its course describing a hemisphere, the pole of which would be the fixed point upon the axis of rotation. The meridian of the sphere at which the quadrant may be placed is read off on the scale at K. The quadrant is also graduated from the bar out to 90°, and has upon it a slide, D, designed to carry different coloured buttons.



The hemisphere and circles described by the perimeter are represented in Fig. 4. The concentric circles serve to show the imaginary lines drawn

by the graduations on the quadrant in their course around the bar, represented by the centre of the figure, while the radiating lines are the points at which it has been arrested in its course. Fig. 4 is the blank I use for recording the field of vision. These blanks are furnished with the instrument, either with gummed backs that they may be conveniently pasted in the note-book as desired, or in books of one hundred each with blank numbers for reference to the case-book.¹ The patient is seated before the instrument with the chin-rest so adjusted as to bring the eye to be examined an inch above the bar M, the inferior orbital ridge resting against the support for the holders which have been removed. The point of fixation for the macula lutea is now so arranged that the image of the perimeter head shall fall upon the blind optic nerve entrance. The field of vision in any of the meridians is now ascertained, if desired, for white or red, yellow, green, and blue, by placing these different coloured buttons in the slide and moving it out to the limit of the field; the point at which it is last seen being recorded in a corresponding point on the blank, 0° being to the left, which becomes for the left eye the temple field, but nasal field for the right eye. To discriminate it is only necessary to mark them right and left. The same blank may be used at succeeding consultations, by recording the field with different coloured ink or crayon, and the date at which it was taken in the same colour, in the margin. A map of the field is made by simply drawing an ink line through the limiting mark on the different meridians.

The field of vision can thus be accurately mapped out, and recorded in such a manner as to be rapidly and conveniently studied and compared with former or subsequent records. This apparatus presents the advantages of giving an accurate field with a satisfactory method of recording it, while it is not so cumbersome and unsightly as many of the instruments recommended for this purpose, and when not in use is easily removed and placed out of the way in its case, or it may be left adjusted without serious inconvenience when using the optometer for other purposes.

112 SOUTH SEVENTEENTH STREET, PHILADELPHIA.

ART. XX.—*Enormous Abscess of Kidney cured by Incision and Drainage.* By J. F. HEUSTIS, M.D., of Mobile, Ala.

THE following case is worthy of record on account of its recovery from a condition apparently hopeless; and the immediate and complete relief from great suffering afforded by the operation for evacuation of the pus.

¹ The complete instrument is furnished by Queen & Co., 924 Chestnut Street, Philadelphia.

The young man had been under medical treatment for some time before he came into my hands; though I had seen him in consultation, and concurred in the course of treatment pursued. At the time of my first seeing him he was anæmic and emaciated, and bore the appearance of constant suffering; and scarcely able to stand upright on account of the pain in his back. He was then passing large quantities of pus in his urine; and there was some fulness in the region of the left kidney. As the pus found a free escape by the ureter, bladder, and urethra, although rather a round-about one, it was considered sufficient to pursue medical treatment alone. About the middle of May, I was called upon to treat him. His condition had become rather worse, owing to the increased difficulty of getting rid of the pus, which would sometimes block up the urethra, and would escape with a spluttering noise, on account of the presence of gas from putrefaction. It soon became apparent to my mind that the mode of evacuation of the abscess was too devious and difficult. And as it was attended with suffering of the bladder, superadded to the actual disease of the kidney, the case was rapidly becoming hopeless. While debating whether it would not be better to make an opening in the loin, and give free vent to the offensive pus, it stopped flowing. With the cessation of the appearance of the pus in the urine, the pain in the back or loin increased; and the fulness or tumefaction increased also, so as to be more apparent. The patient had now become so reduced as to be unable to leave his bed, and hectic fever set in. There was no doubt about the cause of the increased gravity of the case. The ureter, which had been affording an outlet for the pus, had become closed, and the pus was accumulating at the site of its formation. This determined the doubt. An opening must be made to give a free, direct, and constant escape to the accumulated pus, or death was inevitable. I had had him under treatment at that time nearly a month, and it was the middle of June when this state of affairs was reached. Upon inspection there was an evident bulging of the left hypochondriac and lumbar region. The needle of a hypodermic syringe was run through the abdominal wall just below the last rib and outside of the erector spinæ mass where the bulging was most conspicuous. Immediately there began to flow through the tube of the needle a thin and horribly offensive pus. The needle was withdrawn, and a sharp-pointed knife thrust nearly through the thickness of the wall; and a director with slight pressure passed into the cavity of the abscess. The knife was run along the groove of the director and the opening enlarged sufficiently to allow the finger to be thrust in. A great quantity of thin fetid pus poured out, but as it was not caught in a vessel, exact quantity cannot be stated, though, from the length of time it was flowing, and the size of the stream, I thought it would amount to three pints. After it ceased to flow, an India-rubber drainage tube was inserted well into the cavity of the abscess, and made fast by threads tied around it, which were fixed with plaster to the skin. Through this tube carbolized warm water (one drachm of carbolic acid to the pint of water) was injected until all pus was washed out, and it came away clear. Through the tube, which remained in, there was a constant flow of thin, foul-smelling pus in large quantity for some time, but diminishing and becoming less offensive gradually. To prevent systemic poisoning, favour evacuation, and set up a more healthy action in the diseased kidney, the carbolized water was thrown in with a Davidson's syringe (the nozzle of which filled the tube snugly) several times every day until the outflow was clear, and free of all purulent contamination. On two

occasions, while the cavity was being washed out, a mass of sloughy substance of gelatinous consistence about as large as a finger protruded at the opening, and was drawn out. This occurred a short time after the operation, perhaps not more than a week or ten days. And up to this time, except that there was some improvement of appetite, there was very little to encourage a hope of recovery, the weakness and emaciation were so extreme. From this time the improvement was steady and remarkable. His appetite was fully restored, and there was a steady increase of flesh and strength. As his anæmia called for iron, he was given the muriated tincture, with a little honey and water to prevent constipation. It acted very well, and soon the hue of health began to tinge the cheeks. The pus became laudable, free from smell, and smaller and smaller in quantity. The incision healed until the tube was tightly inclosed, and water ceased to regurgitate by its side. The size of the cavity of the abscess, as shown by the quantity of fluid it would retain before the outflow began, was so reduced it would scarcely hold an ounce. The tube being in the way, and causing some pain, it was removed about six weeks after its first insertion. The injections were still kept up once a day, partly to insure the cleaning out of the cavity of the abscess, and partly to prevent the entire closure of the opening. But the opening continuing to contract until the small pipe of the syringe could scarcely enter, a smaller drainage tube was inserted and tied in, for fear of a complete closure and a possible return of trouble. On the 7th of August he came to my office, and it was then the small tube was inserted. He stated that within the last four days, a small quantity of pus, less than a teaspoonful, had occasionally shown itself in the urine; but he had not seen any for a day or two—that his urine was perfectly clear, and was passed freely and easily. After passing the last drainage tube to the depth of two inches, there was no appearance of pus after waiting several minutes. But he said there had continued to be some escape of a thick odourless matter, which necessitated his wearing a piece of cloth to protect his clothing. He has now (Aug. 19th, 1875) the appearance of good health, and has gained flesh to such an extent that his face has become full. He goes about without fatigue, and says he has no pain anywhere.

ART. XXI.—*Amputation of Clavicle and Scapula.* By THEO. J. YOUNG, M.D., of Titusville, Pa.

MAY 31, 1875, I was summoned to attend a child said to have been run over by a train of cars. Arriving at the house, probably within twenty minutes of the time of the occurrence, I found a little girl not yet two years old with the right arm severed from the body, and the tissues of the whole shoulder and breast fearfully mangled. Amidst all the noise and aimless crowding of a crazed multitude and the moanings of a sorrow-stricken family, the little victim of this sad accident alone appeared to be free from terror and suffering. Though its face was pale, and the pulse

scarcely perceptible, its large black eyes had not lost their wonted lustre, and with the expression of strange wonderment and stoic indifference to pain she watched my movements in discovering the nature and extent of the injury.

After a short preliminary investigation, I hastened to get my instruments and the assistance of my friend Dr. T. F. Oakes. Having at my first visit administered a stimulant we found the pulse somewhat improved and determined to proceed at once. Almost without a struggle the child yielded to the anæsthetic, and the following was found to be the extent of the injury. The right arm was severed from the body about three inches below the axilla. All the muscles, nerves, bloodvessels, skin, and connective tissues of the shoulder were torn to shreds and lay with the infiltrated coagulated blood in a confused mass. There was now not a trace of hemorrhage, the clavicle was fractured at the outer third and exposed to view close up to the sternum. The scapula was fractured in two places, one fracture extending transversely across the blade from the middle third of the posterior (internal) border, to about the middle of the anterior (external) border, and another extending from the superior scapular notch to the groove at the anterior border. The operation demanded, thus necessarily embraced the following parts, viz.: The lacerated soft parts, the glenoid cavity, and the neck as far back as the upper third of the anterior border; the acromion and coracoid processes, together with the outer third of the clavicle. The fracture in the middle third of the scapula was not disturbed. The subclavian artery was tied, and during the whole operation the loss of blood did not exceed *two ounces*.

Although the consequent prostration was at times alarming, and dissolution seemed inevitable, yet the patient promptly responded to stimulants and gradually rallied. Twelve hours after the operation the child fell into spasms, which I attributed to the constant throng of curiosity hunters admitted to the room in violation of my orders. These spasms recurred at short intervals for twenty-four hours, when they finally yielded to treatment. From the nature of the wound a cure by suppuration and granulation could only be looked for. On the sixth day all sloughing had ceased, and the parts presented a healthy granulated surface with a wonderfully rapid and successful effort to fill up the deep gap. After a two weeks' battle, with occasionally symptoms of pneumonia, attacks of diarrhœa, want of appetite, and noticeably increasing emaciation, the little heroine at last triumphed, and to-day, five weeks after the accident, on the "fourth day of July," she celebrates her second birthday, and the recovery from an accident which justified but small, if any, hope of recovery.

REVIEWS.

ART. XXII.—*Ventilation of Hospitals.*

1. *Report of the Pennsylvania Hospital for the Insane.* 1874. By THOS. S. KIRKBRIDE, M.D.
2. *On Hospitals.* By GEORGE DERBY, M.D. (Fifth Annual Report of the State Board of Health of Massachusetts.)

THIS report, like all Dr. Kirkbride's, is interesting both to the friends of humanity and the friends of science. He takes this occasion to speak at some length on the subject of warming and ventilating hospitals. Presenting, as he does, the fruit of thirty years' observation and study, his conclusions are entitled to the highest respect and confidence. He reaffirms the conviction published twenty years ago in a treatise on the construction, etc., of hospitals for the insane, that an effectual ventilation of such establishments can be obtained only by means of some artificial motive power. The favour recently shown in some quarters to very different views, and set forth in the strongest manner by Dr. Derby, has led to this fresh declaration of his own, as warranted by the extreme importance of the subject; and for the same reason we have thought it worth our while to call the reader's attention very briefly to some of its most prominent aspects.

We doubt if any matter of sanitary science has been more ventilated than ventilation itself. In the transactions of every board of health, in the reports of every hospital for the insane, as well as those for bodily disease, in plans for new buildings more or less public, we can scarcely ever fail to find something respecting the importance of ventilation, and within the last twenty-five or thirty years, it has been made the theme of scores of special treatises. And yet, after all the speculation and experiment during that period, there remains a wide diversity of opinion as to the comparative value of the various methods proposed, while some are seriously asking if ventilation really does ventilate. At first blush this may seem strange, as the needs of air in respiration have been duly described by physiologists; its movements under various circumstances obey the laws of pneumatics; the volume and rapidity of its currents are easily calculated, and the happiest results have been often obtained in actual practice. Indeed, the very simplicity of the subject may have led to some of this diversity of views, because, as we well know, the easier, apparently, a matter is to understand, the more ready are those to pass in judgment upon it who lack the requisite knowledge. It is not strange, therefore, that to the uninstructed, anxiously desiring to learn the truth, the whole subject seems, to use a homely term, to be in a hopeless muddle. It may be worth our while, therefore, to review the situation—to show very briefly what progress has been made, and to see, as well as we can, where we now stand.

It is within the memory of the present generation that any special attention began to be given to the ventilation of hospitals. Up to that

time, if it was supposed that they needed a more frequent change of air than was furnished to ordinary dwellings through the doors and windows, it was trusted to Providence, aided occasionally by a resort to chimney-tops, cowls, and turncaps. Some thirty-five or forty years ago, the idea occurred to a few thinking people that in order to maintain the sanitary condition of these establishments at the highest point, and thus enable them to fulfil their purpose in the best possible manner, they must be furnished with a more frequent change of air than was needed in a domestic residence. Unfortunately, this period happened to coincide with that when new methods of warming came into favour, no part of *their* purpose being to improve the ventilation. On the contrary, they had the opposite effect. The chimneys with their open fires, which had been the chief reliance, and which did really promote some change of air, were supposed to be no longer required in buildings warmed exclusively by direct radiation from pipes conveying steam or hot water. The effect on public opinion was manifested in a rule adopted by the governors of the Lincoln Asylum for the Insane, England, absolutely forbidding any attempt to warm the wards in any other way than by fires in the chimneys. But the new idea survived the perils encountered in its germination, and in various ways continued to show signs of life, until it became an active, efficient principle in the construction of hospitals, prisons, court-rooms, and other public buildings where large numbers of people congregate.

The project of furnishing hospitals a better ventilation implied the application of an artificial force that would effect a more frequent interchange of air than could be obtained by ordinary arrangements. To carry this purpose into effect required no discovery or invention, but simply the mechanical application of principles as well established as any in art or science, by means of contrivances better fitted for the purpose than any then in use. In the early part of the last century, Dr. Desaguliers, in order to ventilate the British Houses of Parliament, provided in the attic a chimney heated by a fire, into which the foul air entered through openings in the ceiling. At a later period, he introduced a centrifugal wheel or blowing fan, driven by a single labourer. In 1820 the Marquis de Chabannes substituted for the fire in the chimney a number of cylinders filled with steam from a boiler below. Sir Humphrey Davy had previously provided for the admission of fresh air through a multitude of holes in the floor. These contrivances failed to secure the desired object in the highest degree, but long custom and a lack of that delicate sensibility to noxious impressions which is one of the results of modern refinement, led to such toleration of the defect, that any attempt at improvement was seldom thought of. When, however, the new Houses of Parliament were projected, it was determined that they should be warmed and ventilated in a manner most completely to reflect the science and mechanical skill of the time. Accordingly, Dr. Reid was employed to prosecute a course of experiments on the ventilation of the old houses, which ended in a systematic and elaborate arrangement, the efficiency of which was admitted by every reasonable person. Nothing of this kind so skilful, so thorough, and so effective, had ever been done before, although it was only an extension of existing principles by larger and better methods. About this time a large prison was built at Pentonville, near London, which was ventilated by means of a tall chimney starting from the ground, heated by a perpetual fire, into which all the foul-air flues were conducted. Thenceforth the indispensable need of a forced ventilation wherever many persons are

associated together continuously for any considerable time, became a very common belief, even in this country. In 1845, the trustees of the Butler Hospital for the Insane, about to be erected in Providence, R. I., engaged Dr. Bell, then superintendent of the McLean Asylum in Somerville, Mass., to visit Europe, and learn whatever he could, worthy of imitation, in hospital construction, and especially in the matter of warming and ventilation. As the result of his inquiries, he recommended the method adopted in the Pentonville prison, using the kitchen chimney, however, rather than one built solely for this purpose.

Since then scarcely one of the many hospitals for the insane established in this country has been unprovided with a forced ventilation. In them the favourite instrument is the fan propelled by the steam-engine always used in them for one purpose or another. This forces the air over coils of steam pipe, heated in cold weather, up through flues in the walls into the various apartments. The power of the fan is sometimes supplemented by that of the waste heat of fires used for other purposes. Thus, in the department for males of the Pennsylvania Hospital for the Insane, while air is forced in by the fan in the usual way, flues connected with the water-closets convey their foul air downwards and across the lawn, under ground, into the tall chimney that is heated by the smoke made by the fires under the steam-boilers. And so strong is the force thus made, that a lighted paper thrown into the pan actually roars, as the flame is drawn downwards. In a ward recently erected on the female side of the same institution, the foul air passes up into the attic, and thence into a large brick flue heated by the smoke-stack which rises through it.

Notwithstanding this almost universal adoption of a forced ventilation by the hospitals for the insane, it is a curious fact that we find it in very few of our general hospitals. In those of Philadelphia, for instance, excellent as they are in every other respect—always excepting that connected with the almshouse, which never can be excellent until it is torn in pieces and made over again—one only, the Episcopal, is provided with what may be properly called a forced ventilation. In a pavilion of one story just erected for the Presbyterian Hospital, in West Philadelphia, the only provision for admitting fresh air, besides that of the doors and windows, is that of several openings in the walls, through which the air is brought directly from the outside, *whenever it is willing to come*. The openings in the roof through which the foul air is expected to escape, will, no doubt, admit considerably more, though that may not be very conducive to a steady ventilation. In the new hospital established by the University of Pennsylvania, the admitted air is warmed by passing over steam-coils in the basement, and the pipes conveying it pass up in the foul-air flues, and impart to them some of their heat. Several open fires in each ward, as in the Presbyterian Hospital, are supposed to supply some exhaustive force. Besides these sources of ventilating power, there is no other. We understand, however, that the present arrangement is merely experimental, to be changed for something better, if found to be unsatisfactory.

This disposition among men charged with hospital affairs to ignore the advances already made in the art of ventilation, or regard them as of little account, results, we are inclined to think, from very inadequate notions as to the amount of fresh air required for the best sanitary effect, and an imperfect acquaintance with what has been accomplished. It would seem to need no prophet to tell us that of all the buildings occupied

by men or women, none require a more active ventilation than those devoted to the care of the sick. That the exhalations from their bodies, and especially from suppurating surfaces, contaminate the air, and to that degree render it unfit for respiration, nobody doubts. Nor is it denied that such emanations may adhere to the walls and floors and thus become a source of fresh disease. That apartments crowded with persons thus vitiating the air around them, require some special and larger means for renewing the air than would answer in an ordinary dwelling, would seem to be a foregone conclusion challenging universal assent. But exactly how much fresh air should be supplied to the inmates of a hospital is a point which has been decided too often by vague impressions rather than intelligent calculation. Apartments frequented by few people will get sufficient air through the doors and windows. Under ordinary conditions, a person of average size vitiates about twenty cubic feet of air in a minute. Now, to insure him his twenty feet against all adverse conditions, provision should be made for double that amount, and this is what is done in the Pentonville prison above alluded to. Substituting for the convicts of a prison the patients of a general hospital, double this amount, or eighty feet, would not be an unreasonable supply. Consequently a ward containing thirty patients would require 2400 cubic feet of air per minute, and this it must have to secure the best results of treatment. Now, can anybody suppose that by any possible arrangement depending solely on natural atmospherical conditions, even a tithe of that amount could be furnished steadily and continuously, night and day, summer and winter? With doors and windows wide open, and a stiff breeze blowing outside, we might, certainly dispense with every other means, but for how many days in the year, or portions of a day, do such conditions exist? For weeks together the windows must be closed, and for days together the air is still. No matter how many openings may be provided for the fresh air to come in, we know it will not come at those times when the temperature of the outside and that of the inside air are nearly equal.

It is a common impression that when provision is made for heating the air before it is introduced into the wards, the heat will impart to it a motion sufficient for the requisite ventilation. Considered as a system, it would be enough to say in regard to it that for a large part of the time the air is not heated at all. This method of ventilating by means of the force contained in the fresh heated air has been tried, and if the amplest experience is worth anything, its inefficiency at all times is proved beyond question. Some years ago, when State hospitals for the insane began to be established in this country, the common arrangement was to warm the fresh air in the basement by bringing it in contact with furnaces, from which it was conducted by flues in the walls to the various apartments, and from them the foul air ascended by another set of flues to the attic, and went off through windows in the roof or gables. At least such was the builder's programme, but practically it never fully accomplished the purpose. To some extent, certainly, the air was renewed by this arrangement, for the heated air which flowed in would necessarily displace an equal amount of air already used; but the interchange thus effected was not sufficient. The supply of fresh air was too small, and the ascensive motion imparted to it by the heat was not strong enough to overcome the outside pressure which forced the foul air back through many of the flues. Even this imperfect performance was not accomplished when the admitted air required

no warming. True, the slight warming of the air effected by respiration would give it an upward motion; but the idea, if ever seriously entertained, that the amount of displacement thus produced could meet all the requirements of hospital ventilation, would only show how poorly the whole matter has been understood.

The failure of the method of ventilation here described, even when supplemented by turncaps, patent ventilators, *et id genus omne*, confirmed the impression derived from general principles and the examples abroad, that resort must be had to artificial force, and it has happened, as already stated, that it is now used, in some shape or another, in nearly all our hospitals for the insane. If such means are required in them, for a stronger reason they are required in general hospitals, where the air is so much more rapidly vitiated by active bodily disease, which is a comparatively insignificant element in the former.

And now, in the face of all this testimony, we are met by the objection that all these methods of forced ventilation have practically failed. In a paper published in the Fifth Annual Report of the Massachusetts State Board of Health, by the Secretary, the late Dr. Derby, whose decease in the maturity of his powers was a serious loss to sanitary science, he says: "All systems of supplying the needed amount of fresh air to hospitals of more than one story, have failed. The most elaborate artificial contrivances do not meet this fundamental want. From the Lariboisière at Paris, to the City Hospital at Boston, they are failures, one and all." It is to be regretted that the facts that served as the foundation of an opinion likely to have so much weight were not fully given, for thus only could its correctness be tested. We may safely say, however, that they would afford it but poor support, were they no stronger than the two which are mentioned. Two methods of ventilation are used in the Lariboisière Hospital. In some of the wards the motive power is a fan; in others it is a chimney heated by pipes filled with hot water—Duvour's system, as it is called. A few years ago the French government appointed a commission to prepare plans for ventilating the new Palais de Justice, and to aid them in this duty they made a very elaborate investigation of the ventilation of this hospital. They reported that the two methods were about equally efficient, both furnishing from 2500 to 2700 cubic feet of air per bed per hour. The commission regards 3000 feet as the proper supply, and if still more be needed, an increase in the capacity of the means is all that is required. How a system of ventilation which supplies this amount of fresh air can be called a failure, we are unable to see. To us it seems like an eminent success; and so it seemed to the commission, for they recommended the adoption of the Duvour system in the Palais de Justice. Some would favour a larger supply, but if all was obtained, be it much or little, which was wished or expected, then, certainly, it was no failure. In the Boston City Hospital a fan has been used, and we are told that the result has not been satisfactory. Why, exactly, we know not, but there are many conceivable, and many really existing, causes, to one or more of which it may be attributed, besides the inefficiency of the system. If in Paris a fan may be made to force into a building 2700 cubic feet of air per bed per hour, we presume that by observing the proper relations of size between the fan, the air ducts, and the building, it may be made to do the same thing in Boston. But there are some well-known facts in the history of that hospital during the first few years which will explain its defective ventilation without obliging us to blame the fan. In

the first place, from motives of economy, the fan was used only a small part of the day. Then, frequent leaks in the soil pipes had contaminated the earth of the cellar. Some of the connections of these pipes with the drains were imperfect, so that sewer-gas escaped into the cellar. The fresh-air ducts, in their passage under the building, were not air-tight, and thus received sewer-gas from leaky drains and sewers. Under such circumstances, a fan with tenfold its capacity could not have given the wards pure air. Of course there was a good deal of pyæmia and erysipelas, but of which there was a marked abatement after these defects were corrected. Even without these defects the air supply would have been insufficient for lack of a proper proportion between the fan, the air-ducts, and the steam-coils.

This opinion of Dr. Derby we are unable to reconcile with his strong approval of the ventilation of the Warren Ward, lately erected at the Massachusetts General Hospital. In the last Report of that institution, he is quoted as saying (under date of April 5, 1874), after measuring the air currents several times, and finding the air supply equal to 7000 cubic feet per bed per hour, "on the whole it is the best ventilated hospital ward I ever saw." Now, this ward is warmed in a great degree by four Franklin stoves placed in its centre, and discharging their smoke into a common stack. Into a flue constructed around this stack, and warmed by it, open the foul-air flues, a powerful motion being given to their contents by the rarefaction thus produced. Stronger testimony than this in favour of artificial ventilation can scarcely be found. Had his observations been made on some day when there were no fires in the stoves, and the windows closed, he would have found the ventilation, probably, much less satisfactory. This suspicion is confirmed by the suggestion of the superintendent, Dr. Folsom, that in the summer when fires in the ward are not needed to warm the patients, the chimneys should be heated by fires below the floor, in the basement or cellar. This arrangement he has actually made in his plans for warming and ventilating the Johns Hopkins Hospital in Baltimore.

That attempts to ventilate by means of artificial force have sometimes failed we freely admit. Considering the comparative newness of the art, it is not strange that the mechanical appliances required should have been managed occasionally without a very strict compliance with the principles of natural philosophy. We have seen a central chimney for receiving the foul air too short even for the draught required by the fires under the boilers. We have seen steam coils placed in the cupola to which the foul air arose, quite inadequate to exert much extractive force, and so poorly put together that their incessant leaking made them a nuisance. We have seen a fan whose capacity for work obviously fell far short of the duty required. All this indicates only a lack of mechanical skill, not any fault in the principle. We have yet to learn the first instance of failure where the arrangements have been correctly made; and these are not a matter of magic or mystery, but simply of that knowledge of the properties of air which any high-school pupil may be supposed to acquire, of the requirements of respiration, and of an exact calculation of the force of the moving power and of the relations between the flues of ingress and those of egress.

Another source of distrust in regard to forced ventilation is a misconception of its legitimate results. More is apt to be expected than is possible in the nature of things. By no device of learning or of mechanical

skill can the air of a hospital ward be made absolutely pure. Dr. Hammond very justly says, "It is rarely the case that the wards of a hospital can, by any system of ventilation, be so free from carbonic acid, aqueous vapour, and organic emanations, that the contained atmosphere will be identical in composition with that of the outside of the building. It is too much to expect this." (*Treatise on Hygiene*, p. 425.) Where, for instance, a patient has smeared the floors and walls of his room with his own excrement, a whirlwind blowing through it, even after the most thorough cleansing, would not for many hours deprive it entirely of bad odours. Let it ever be borne in mind that ventilation is a poor substitute for cleanliness, and whenever we hear the former condemned we like to know if the fault were not in the latter.

Judgments respecting the efficiency of a hospital ventilation are often prematurely formed after a hasty inspection, instead of a deliberate examination under different circumstances. The first and perhaps the only disagreeable odour that meets the olfactories is apt to be accepted as conclusive proof of a failure. It might have been a casual, accidental incident arising from some unusual cause. Occasions are frequently occurring where the performance of the necessary service may leave behind for a few minutes something perceptible to the senses. We believe the cry of failure would not have been so often heard if those who raised it had more wisely apprehended the limits of the ventilating art. Unless we have some definite idea of what it can and what it cannot accomplish, our estimate of the measure of its success in any actual case is liable to mistake. If it be a failure to provide at the same moment an amount of air and warmth equally satisfactory to a large, corpulent, sanguine individual, and one meagre, languid, and dyspeptic; to one just refreshed by a ride and a mutton-chop, with a glass or two of sherry, and another who has been sitting quietly the whole morning; to one who has accustomed himself to all sorts of weather, and another morbidly afraid of draughts; to the officers and attendants of a hospital, rejoicing in the glow of health, and the patients wasting away by disease—then, no doubt, forced ventilation has sometimes proved a failure.

Another reason offered for distrusting forced ventilation is the fact that its friends disagree respecting the relative merits of the various methods in use. We do not dispute the premise, but we cannot accept the conclusion. If we should maintain that sewing machines are just a delusion and a snare because their respective friends claim for each superior excellence, or contend that vaccination should be abandoned because it sometimes fails to afford that security which has been claimed for it, we should be guilty of logic about as absurd as that. Where different methods are used for obtaining the same end, all with some degree of success, it is not strange that opinions differ as to their relative efficiency. The circumstances under which they act, the mode of their application, the opportunities for observing results, all may differ and thus obscure for awhile the question of relative success. Disagreement may be a sure step in the course of inquiry, for it leads to fresh research, and thence to improvement. To reject a good thing altogether because people differ as to its exact value, is generally prompted by a spirit of indolence rather than by a healthy scepticism.

We have heard the expense of a forced ventilation given as a reason for its omission by some who are obliged reluctantly to acknowledge its success. General hospitals, it is said, have very limited means; they are dependent on the charity of the public, and must, therefore, observe the

utmost frugality in all their arrangements. And this excuse is offered in cases where there would seem to have been no stinted outlay for every other purpose, not even that of architectural decoration. Like most good things, good ventilation, unquestionably, costs money; and if it is necessary to the best hygienic condition, as we believe it is, then it must be had regardless of expense. When we undertake to put the patients on a stinted allowance of food and medicine in order to save expense, we may talk of stinting their supply of fresh air, but not before. In fact, however, the cost of maintaining a forced ventilation in general hospitals is much less than one might infer from this excuse. A commission that examined the ventilation of the Parisian hospitals a few years ago, reported that the annual cost per bed varied from six dollars and seventy-five cents to about triple that amount. In the Pentonville Prison the ventilation was found to cost from a quarter to half a farthing per cell per day. In this country, where fuel is so much cheaper than in France, the cost would be much less; and wherever steam is employed for warming and domestic purposes, the additional amount required for running a fan or heating a chimney would make but a small item in the expenditures of the establishment.

To write about hospital ventilation without adverting to the one-story pavilions that have come into such sudden favor, would seem like acting the play with Hamlet left out. One of the advantages claimed for them is that of a better ventilation than is possible in buildings of two or three stories. Under what rule or principle of natural philosophy this could be expected, we are unable to see. It has arisen, probably, from the vulgar error of confounding quantity with quality, and supposing that if a patient has plenty of space, we need not concern ourselves about the qualities of the air. And yet, we never heard of a person fearlessly exposing himself to marsh miasmata, in the belief that having the whole heavens above and around him, he would be perfectly safe. Whether with a natural or forced ventilation, a large space overhead can lend no aid in renewing the air. For, of course, the larger the amount of air to be changed, the more active and powerful must be the agency employed in producing the change. Any deficiency here implies a lack of that steady movement of the air which marks a good ventilation, and also induces counter currents in all directions. Ridge ventilation, as it is called, must, under the most favourable circumstances, be disturbed by wind and rain and snow; and whoever supposes that the frequent closing and opening of valves and louver boards required to meet these incidents will be properly attended to, can have no practical acquaintance with nurses and attendants.

In the arrangements for warming and ventilating the new one-story ward at the Presbyterian Hospital, in West Philadelphia, all notions on this subject, hitherto considered as settled, have been utterly discarded. The ward is warmed by direct radiation from hot-water pipes that run along the walls near the floor. The fresh air is admitted directly from the outside through holes in the walls below the level of the beds, and, of course, cold in cold weather. When more is required, resort is had to open windows. The foul air is supposed to find its way out through the openings in the ridge. No effort of ingenuity can prevent the fresh air from entering some of these openings, and thus producing a general mixture of foul air and fresh air. The ventilation is supposed to be promoted by four fire-places, as it undoubtedly will be, in a small degree, while there

is fire in them. The water-closets are supposed to be ventilated through the windows when left open. As if to increase the expense of warming, the space between the floor and the ground, corresponding to the cellar, is swept by the winds of heaven through many large openings in the walls.

Precisely what form the supplementary force should take must depend, in a great degree, on the circumstances of each particular case. The most economical, certainly, is that of a tall chimney heated by the smoke and gases of the fires used in the house, into which the foul air is discharged, and the hotter and higher it is made, the greater will be its power. This has the advantage of utilizing heat that would otherwise be wasted, of being constantly in operation, and of requiring no additional attendance. Where steam is not used, the kitchen chimney may, generally, be so contrived as to do the work, and if it prove insufficient for the purpose, additional heat can easily be provided. To examine the various ways of adapting these general methods to actual practice, forms no part of our present purpose. This is the business of the architect and builder aided by the results of scientific investigation, and profiting by experiments already tried. We have cared only to meet the pressing necessity of the time, that of re-affirming the great fundamental truth—as well established, certainly, as any truth can be, by principle and practice, though strangely ignored just now—that a ventilation forced by some artificial means is absolutely necessary to the highest sanitary condition of a general hospital. I. R.

ART. XXIII.—*Researches into the Antagonism of Medicines; being the Report of the Edinburgh Committee of the British Medical Association.* By JOHN HUGHES BENNETT, M.D., F.R.S.E., Hon. Fellow of the King's and Queen's Coll. of Phys. in Ireland, etc., Chairman and Reporter. 8vo. pp. 100. London: J. & A. Churchill, 1875.

THIS handsome brochure of a hundred pages is a reprint from the *British Medical Journal*, in which the Report originally appeared, and where it has doubtless been perused by many of our readers. A brief abstract of its contents has already been given in the "Quarterly Summary" of the *American Journal of the Medical Sciences* for January and April, 1875, so far as the results of the experiments had been then reported. We embrace the present occasion for a rather more extended notice.

In his opening article, Dr. Bennett alludes to his former Report to the British Association, made in 1868, "On the Action of Mercury on the Biliary System," and he thinks that the results of his investigations at that time "finally settled the long disputed subject, and demonstrated, beyond the possibility of reasonable objection, that in this respect mercury has none of the properties that have so long been attributed to it."

We do not propose to open this question at present. We have not forgotten the stir that this announcement made in the profession at the time. We remember that many were disposed to yield up their long-cherished convictions on this point to this eminent authority; whilst many others—and we apprehend their number has not diminished—still declined to relinquish the use of a remedy of whose value they believed they had witnessed the most ample proofs.

The Committee, whose Report is embodied in the present volume, was appointed in 1869. It was composed of gentlemen eminently qualified for the important work entrusted to them. Several years of labour were devoted to its various details; and when we are informed that no less than *six hundred and nineteen* experiments were performed upon living animals (where were the *anti-vivisectionists*?), and the results carefully watched and tabulated, the reader may get some faint idea of the magnitude of the labours and the length of time involved in the investigations, although none but those who have actually performed such work can adequately appreciate it; for as the author correctly observes, "even the account of the investigations themselves, with the tabulated results of the experiments, can give only a feeble conception of the laboratory-work accomplished." With such evidence of the carefulness and accuracy of these experiments, it is impossible to withhold our assent to the conclusions arrived at, at least so far as the lower animals are concerned; for we are not of the opinion that the results of experiments of this nature made upon animals—even those most closely allied to man, such as the dog, the cat, and the rabbit—can always be predicated upon the human subject. We venture this assertion, after some experience of our own in this line.

The following list comprises the different substances between which the *antagonism* was sought to be established:—

1. Hydrate of chloral and strychnia.
2. Sulphate of atropia and Calabar bean.
3. Hydrate of chloral and Calabar bean.
4. Hydrochlorate and meconate of morphia and Calabar bean.
5. Sulphate of atropia and meconate of morphia.
6. Meconate of morphia and theine.
7. Meconate of morphia and caffeine.
8. Meconate of morphia and guaranine.
9. Meconate of morphia and infusion of tea.
10. Meconate of morphia and infusion of coffee.
11. Extract of Calabar bean and strychnia.
12. Hydrate of bromal and atropia.

These different substances were introduced into the animals hypodermically, except in the case of the infusions; here, the bulk of the article precluded the hypodermic method, and it had to be injected into the stomach through the œsophagus. As might have been supposed, vomiting usually followed this method of administration, and the experiment failed in consequence of the rejection of the article. We here recall the beautiful experiments of Orfila, made upon dogs, for the purpose of detecting certain poisons by their physiological actions. This authority strongly recommends tying the œsophagus in cases where the poisonous substance is introduced into the stomach; assigning as a reason the very difficulty above referred to—the liability of the animal to vomit. (*Toxicologie*, 1852, i. p. 53.)

The general scope of Dr. Bennett's experiments, as in the case of those of Dr. Fraser, previously performed (*Trans. Royal Society of Edinburgh*, vol. xxvi.), had reference to the establishment of the following points: first, the physiological action produced; secondly, the minimum fatal dose of the two medicines used to antagonize each other; thirdly, the influence of the supposed antagonistic substance upon the other, when both were *simultaneously* injected; fourthly, this influence when the antagonistic substance was injected *before* the fatal one; fifthly, this influence when

the antagonistic substance was injected *after* the fatal one ; sixthly, the limits of the antagonism, when such existed ; and, lastly, to verify, in every case, the supposed antagonism by a crucial experiment performed upon the animal supposed to have been saved by the antidote, by administering to him hypodermically the same dose of the poison several days after his recovery ; if death then took place, the conclusion was that there was a true antagonism between the two substances employed.

Our limits will only allow us a brief notice of some of the interesting and important results arrived at.

Antagonism between Hydrate of Chloral and Strychnia.—The result of repeated experiments showed that in rabbits the average minimum fatal dose of strychnia is $\frac{1}{96}$ th of a grain for every three pounds weight, or $\frac{1}{288}$ th of a grain for every pound. (This would correspond to a little over half a grain for a man of 150 lbs. weight ; and half a grain is known to have destroyed an adult man.) The minimum fatal dose of hydrate of chloral was found to be twenty-one grains for a rabbit weighing three pounds. When these two substances were administered *simultaneously*, the antagonizing influence of the chloral hydrate was very obvious ; in many instances, a dose of strychnia, *more than three times larger* than the minimum fatal one, being completely neutralized by a dose of chloral varying from eight to nineteen grains. Even in those cases where the antagonism was not complete, the influence of the chloral was very manifest, both in prolonging life, and in modifying the symptoms.

When the hydrate of chloral was injected *some time after* the administration of the strychnia, it was found that its antagonizing effect was materially lessened, in proportion to the length of the interval between the two doses. In fact, if the antidote was withheld until after the physiological effects of the strychnia (tetanic spasms) showed themselves, the animal rarely, if ever, survived ; death occurring apparently from asphyxia caused by spasm of the respiratory muscles. In no instance was life saved when the interval was so long as ten minutes and upwards. This fact is, of course, one of great therapeutic importance. In cases of strychnia poisoning in the human subject, the patient should be brought under the influence of chloral hydrate as speedily as possible, either by subcutaneous injection, or, according to the author, “even by the direct introduction of the substance into a vein.” As regards the latter method, however, we must confess to some misgivings. Several cases of the successful use of hydrate of chloral as an antidote to strychnia poisoning have already been reported in the journals.

As regards the antidotal influence of strychnia over chloral hydrate, the results of the committee’s experiments (fifteen in number) would seem to be less satisfactory than those of the converse character, although there is positive proof of some antagonism. According to the author, “there is little hope of saving life after fatal doses of chloral hydrate, by the subsequent injections of strychnia.” And the reason seems obvious, when we remember that while the former acts both upon the spinal centres and the brain, the latter (strychnia) exerts no known influence on the brain, and therefore cannot relieve the coma and congestion of the encephalon ; “and consequently, even though there may be muscular twitchings, and even tetanic convulsions, the animal dies comatose.”

An interesting case of the apparent antidotal power of strychnia in chloral poisoning is reported by Dr. E. Levistein (*Centralbl. für Med. Wissen.*, 1875, No. 17). A man who had taken six drachms of chloral

was found half an hour afterwards in a deep sleep; subsequently there was tumultuous action of the heart, which organ soon became extremely enfeebled; the respiration was difficult and laboured; pupils greatly contracted; temperature reduced to 91.2° . Artificial respiration and faradization proving unavailing, two doses of strychnia were administered hypodermically, of one-twenty-second of a grain and one-thirty-second of a grain respectively, at short intervals. The result was convulsive movements of the muscles, increased cardiac impulse, rise of temperature, and dilatation of the pupils. Artificial respiration had, however, to be kept up for eight hours. Trismus and tetanic spasm remained for eight hours after the second injection; but at the end of thirty-two hours the patient awoke, feeling fresh and well.

Antagonism between Sulphate of Atropia and Calabar Bean.—The results under this head in some respects resemble those reported by Dr. Fraser, in the paper already referred to, and which was reviewed in this Journal (Oct. 1872). The area of antagonism was found to be more limited than that indicated by Dr. Fraser; and, in the opinion of the author, "for all practical purposes atropia as an antidote to Calabar bean is useless, and not to be compared with the effects of chloral hydrate." The experiments of Dr. Fraser, however, seem to demonstrate very clearly their physiological antagonism: "A dose of physostigmia, three and a half times greater than the minimum fatal, is completely neutralized by an exceedingly small (comparatively) dose of atropia—one-tenth to one-fifth of a grain." This authority recommends that in cases of poisoning by Calabar bean, atropia should be administered hypodermically, one-fiftieth to one-fortieth of a grain, and the dose repeated until dilatation of the pupils is observed (*loc. cit.*).

As regards the antidotal power of *Hydrate of Chloral over Calabar Bean*, this would "seem to be limited, in all cases, by the conditions: 1. *By the dose administered*; more than a minimum fatal dose of the extract of Calabar bean destroys life, notwithstanding the administration of chloral hydrate. 2. *By the interval of time between the administration of the two substances.*" Life may often be saved when they are given simultaneously, while there is very little, if any, chance of escape for the animal if the chloral be given more than eight minutes after the fatal dose of Calabar bean. But even in the fatal cases, the convulsive effects of the latter poison are decidedly modified.

Antagonism between Atropia and Morphia.—This has been the subject of inquiry by numerous experimenters, among whom may especially be mentioned Dr. John Harley and Dr. Fraser in Great Britain, and Drs. Mitchell, Keen and Morehouse in our own country. The results, however, have been somewhat contradictory.

A large number of experiments, varied in many particulars, were performed by the committee with a view to settle this vexed question. The conclusions arrived at are: that atropia is antagonistic (in rabbits and dogs) to morphia, only within a limited area; life may even be sometimes saved by the use of the former after a fatal dose of the latter. Morphia does not act beneficially after poisonous doses of atropia—the tendency to death being greater, in these cases, than if a large dose of either substance had been taken alone. The benefit arising from the use of atropia after a large dose of morphia is probably due to the action of the former upon the bloodvessels, "causing contraction of these, and thus diminishing the congestion of the brain and spinal marrow." The author thinks that

"in man, sulphate of atropia would be too dangerous and uncertain a remedy to depend on in cases of poisoning by opium, or any of its salts." This is also the opinion of Dr. John Harley (*Old Vegetable Neurotics*, p. 309); but it does not quite accord with the conclusions of Drs. Mitchell, Keen and Morehouse, as detailed in this Journal (January, 1865). The profession appears to be about equally divided as to the belief in the efficacy of these two substances as antidotes to one another, in man. Certainly a long array of cases might be cited where the fatal effects of each *appeared* to be neutralized by the timely administration of its fellow.

Some experiments performed by ourselves with these two substances, on dogs, in 1870, and reported in this Journal (April, 1871), exhibited a certain amount of antagonism. "In one of these trials, in which four grains of morphia were injected subcutaneously, narcotism was fully produced in one hour; when four grains of atropia were similarly administered, the animal became paralyzed in an hour, but showed no disposition to spasms. In twenty-four hours he had completely recovered, with the exception of a slight dilatation of the pupils."

On one point in this connection, the results of Dr. Bennett's experiments on the tolerance of the dog for atropia are singularly at variance with those of Dr. Frazer, as given in his paper already alluded to. While the former states (p. 39) that "three-fourths of a grain of sulphate of atropia, administered hypodermically, will kill a dog weighing 14 or 15 pounds in about three hours, the experiments of the latter demonstrate the fatal dose to be *fourteen or fifteen grains*. Both authorities give *twenty-one grains* as the minimum fatal dose for rabbits. Our own experiments (above alluded to) coincided with those of Dr. Frazer. In one case, *eight* grains of atropia were introduced, in two equal doses, within forty-five minutes; the animal perfectly recovered in twenty-four hours. In another case, *fourteen* grains of atropia were introduced within one hour into the subject of the first experiment (some days after his recovery); from the effects of which he again completely recovered in the course of a few days.

Not the least interesting of the researches of Dr. Bennett and his colleagues are those pertaining to the physiological action of *Cocaine*, *Theine*, *Caffeine*, and *Guaranine*, and the *Antagonism of these substances with the Salts of Morphia*. The four bodies first mentioned closely resemble each other in their chemical composition. There was found to be a striking correspondence, likewise, in their physiological properties. An extended series of experiments demonstrated the following as among the most important results, on frogs, mice, rabbits, and cats: 1. Loss of motor power and of sensibility; the former, however, "not due to paralysis either of the motor columns of the spinal cord, the motor nerves, or the muscles; the latter due to a true paralysis of the sensory column of the cord." 2. Enlargement of the capillaries, both of the surface and in the interior of the body. This was shown by the general congestion of the body, and was manifestly due to paralysis of the vaso-motor nerves, causing dilatation of the vessels. 3. Diminished action of the lungs and heart. 4. In large animals (cats and rabbits), increased salivary secretion. 5. Generally, a contraction of the pupils. 6. Tenesmus, accompanied by a copious discharge of clear mucus from the bowels. In cats, there was a much greater degree of cerebral excitement than in rabbits.

As regards the antagonism between these different substances and *morphia*, the result of the experiments may be summed up as follows: An

antagonism does undoubtedly exist, but it is confined within a limited area; for if a dose of morphia slightly above the minimum fatal be given, the animal rarely survives, even though a full dose of the antidote be administered simultaneously, or soon afterwards. And, further, if the dose of the antidote (theine or caffeine) be greater than their minimum fatal one, death is very apt to occur with symptoms of poisoning by the latter. The minimum fatal dose of theine or caffeine, for a cat of average size, is about five and a half grains.

Experiments were also made to determine the antagonism between morphia and a strong infusion of tea, and a decoction of coffee, with a view to therapeutic deductions in reference to the employment of these latter substances as antidotes in opium poisoning. As has been already remarked, there was great practical difficulty in administering these liquids to the animals (dogs) by injection into the stomach, in consequence of their strong tendency to vomit. In a few instances, however, where, by several repetitions of the experiment, the liquid was retained, the result was very satisfactory; the narcotic effects of the morphia appeared to be controlled by the antidote. The animal, instead of evincing the stupor and coma characteristic of morphia, was very restless and irritable. In connection with the latter experiments, the author quotes an interesting case reported by Professor Sewell, of Quebec, in the *Lancet*, of 1866: A lady aged 34, had suffered severely from angina, to relieve which she had accustomed herself to enormous doses of chloroform by inhalation. On one occasion, she substituted for the chloroform two drachms of Battley's sedative solution of opium every half hour, or *fourteen drachms* in the course of seven hours—equivalent to over 60 grains of opium. When seen a few minutes after, the coma was perfect; pupils contracted to a pin's point; body perfectly cold to the waist; pulse imperceptible; respiration *two in three minutes*. Half a pint of very strong infusion of tea was now administered per rectum. In twenty-five minutes, the pulse returned at the wrist; the face was less pale; respiration, *six in the minute*. The enema was now repeated; and in four hours from the commencement of the attack, the patient was able to speak, and was shortly out of danger. The same writer alludes to three cases of alcohol poisoning in children. Coma was complete in two of them; but they were all restored to consciousness by the use of the same remedy, in an hour or less. Its use is also suggested in puerperal convulsions, and in those arising from uræmic poisoning.

Antagonism between Bromal Hydrate and Atropia.—The chief physiological differences between chloral hydrate and bromal hydrate are the following: bromal hydrate is from four to five times more powerful than chloral hydrate; it never produces hyperæsthesia, and anæsthesia only when the animal is profoundly comatosed; it always contracts the pupil, which chloral hydrate seldom does; it acts less vigorously on the cerebral hemispheres, and more on the ganglia at the base of the brain; hence, it frequently causes convulsions, which chloral hydrate never does. The author regards the action of bromal hydrate and morphia on one another as "a clear example of physiological antagonism." He explains it thus: "Death from the effects of bromal hydrate is due almost invariably to the accumulation of the saliva and mucus in the air-passages. This may be so excessive as to cause death by asphyxia. The convulsions which usually occur are due to asphyxia. Atropia arrests this secretion, partly by diminishing the action of the salivary glands, and also by contracting the bloodvessels generally." In this way it sometimes happens that

atropia may save life after a fatal dose of bromal hydrate; "though the converse does not apparently hold good, since there was always a failure to save life after a fatal dose of atropia, by the subsequent injection of bromal hydrate."

In taking leave of this interesting and instructive volume, we cannot withhold our admiration for the rare amount of persevering labour and skill bestowed upon these researches. We cordially unite with the author in trusting "that no parsimony nor error in administration will restrain the British Medical Association from continuing the noble efforts it has commenced, and rewarding by liberal grants the arduous efforts of men who will dedicate themselves to these pursuits." J. J. R.

ART. XXIV.—*Circular No. 8. War Department, Surgeon-General's Office, Washington, May 1, 1875. A Report on the Hygiene of the United States Army, with Descriptions of Military Posts. 4to. pp. lvii., 566. Washington: Government Printing Office, 1875.*

THIS bulky volume, designated as Circular No. 8, emanates from the Surgeon-General's office in the War Department. The report proper is prepared by Dr. John S. Billings, Assistant Surgeon, U. S. A.

We are very glad to welcome a general order from the War Department, dated November 17, 1874, which will greatly strengthen and encourage post-surgeons in their efforts to prevent disease. Heretofore, sensitive men have shrunk, sometimes with too much reason, from complaints, investigations and recommendations which might seem to the non-medical judgment of the commanding officer trivial or officious. Now, however, it is made the duty of each surgeon to make a monthly examination into the sanitary state, conditions, and surroundings of his command. The results, together with such recommendations as seem likely to benefit the health of the command, are ordered to be embodied in a report to the commandant. If this officer decline to act upon recommendations in the surgeon's monthly report, he is to endorse upon it the reasons of his refusal, and forward to the department commander, furnishing also a copy of endorsement to the medical officer for his records. If, on the other hand, recommendations are acted upon, that fact shall be noted in the medical records. We regard this order as one of very great importance, both to the health and efficiency of the army, and to the dignity and honour of the profession.

That our army offers a fitting field for hygienic work, becomes startlingly apparent when we learn that among these picked men, selected after careful examination and the rejection of all that present any signs of weakness or disease, there occurs a mortality from illness alone, fifty per centum greater than the average among men from twenty to forty years old, in the whole country.

Glancing at the principal influences affecting the soldier's health and comfort, Dr. Billings refers to his habitations, his food as provided and prepared, his clothing, and his hospital accommodations. The quarters, whether in barracks or casemates, are, as a rule, too thickly populated, wholly destitute of ventilation, other than by doors and windows, often badly located, and generally deficient in many things needful for a healthful

human habitation. The effects of bad air are strikingly manifest. A remarkable instance is quoted where soldiers on the same post, with the same water, food, cookery, duties, exposures, and the same surgeon, presented a curious discrepancy in the amount of illness reported. Two companies occupied barracks which could be made, and were made for warmth's sake, almost air-tight. Two others were in quarters so rudely constructed that cold draughts poured in through many crevices, to the disgust and discomfort of the men. Yet the sick-list of the latter was but one-half that of the former.

Dr. Billings expresses the deliberate opinion that at least one hundred men are lost to our small army yearly, by death and discharge, through diseases due to bad air. The class of diseases most directly traceable to poor ventilation are lung troubles.

We believe our readers will be both surprised and indignant to learn that in time of profound peace neither pillows nor sheets are furnished for the bunks of our soldiers. The folded over-coat does duty for the former, and blankets, which are "seldom washed," for the latter. The bed-sacks are usually too short, and we can readily believe Col. C. H. Smith, when he bears witness that "no amount of too short bed can make a man comfortable."

Notwithstanding successive improvements, the army ration is yet believed to be deficient. It is true that by sale or exchange of certain portions, and by establishment of post gardens, its short-comings can often be rectified. An absolute increase in the dry-weight, together with certain modifications in the composition, are advised. More soft bread, fresh meat in greater proportion to fat bacon; and the addition of potatoes, or, failing these, dried fruits, together with canned milk or cheese as alternative for peas and beans, are some of the changes recommended. A tendency to save too much off the rations should be prevented by strictly forbidding any expenditure of the company fund thus acquired for any other purposes than procuring a varied diet. Some things now purchased out of these funds ought to be furnished by the quartermaster's department. To the civil apprehension, there is no more justice in making the soldier pay for his knife and fork than for his bayonet.

Improvements have been making in the clothing issued to troops; and our army was never better clad than at present. Different styles, adapted to the extremes of heat and cold, might be employed with advantage.

In regard to hospitals, we note the following statements as possessing some interest in view of recent and present discussions. "The 'pavilion plan,' which for a time was supposed to be a perfect panacea against all evil, has been found, by sad experience, to furnish no security against the evils summed up in the word 'hospitalism.'" The author then goes on to speak with apparent approval of temporary wooden "barrack hospitals," to be torn down every ten years. These, however, he believes not practicable in cities where space is valuable. A description of a new hospital of three stories in Washington serves to illustrate the writer's views of hospital construction. This is heated by hot-water and ventilated by tall chimneys of large size, containing smoke-flues to create a current.

Dr. Billings' report, though occupying only one-tenth of the volume, contains much valuable and curious information and many brief but very suggestive hints. To the matters giving occasion to some of these last we shall refer again.

The bulk of this work is due to the descriptions it contains of over two

hundred military posts, scattered all over our country, in every possible variety of climatic and hygienic condition. These are prepared by medical men, and aim at presenting not only the general facts regarding the different localities, but especially all such circumstances as can have any bearing upon the health of troops there stationed. Appended to each is a table giving temperatures and rainfalls, during four official years from 1870-1 to 1873-4; also a table showing mean strength of garrison, with cases and deaths distributed under twelve or fifteen disease-headings, during the same periods. In looking at the latter, one is struck with the immense variations occurring in successive years at the same posts, not only in the total annual sick-report, but in the proportionate prevalence of particular diseases. For many of these discrepancies, one can easily imagine a sufficient reason. Unfortunately, however, no explanation whatever is generally offered in the text which accompanies the tables. One year's garrison may be a fine set of fellows from a crack regiment, healthy, spirited, disciplined, and self-respecting; while the next may be a poor lot of varlets, demoralized by bad luck, bad discipline, or a dozen other causes, so that they are fit for nothing but complaining. Or one company may bring firm health from their previous post, while the next may be just reaping the fruits of exposure in some unwholesome district. Different years, even at the same post, present considerable variety in the climatic and other disease-producing influences. These and other considerations may be conceived to be sufficient to account for the extraordinary discrepancies observed; but surely we should not have been left wholly to our own conjectures. When in a table we find six times as much rheumatism one year as another, why may we not find some reference to the fact and its causes in the ample text of the accompanying description?

A few instances of unexplained variations may be cited. Thus at Fort Porter, one year the number of sick is three or four times the garrison strength, and another year only about two-thirds that strength. At Fort Wayne, we find cases of disease, year 1870-71, 393 to garrison of 190; two years later, 85 cases to 201 men. The difference in this case, to be sure, is principally, though not wholly, due to variation in intermittent fever, which fell from 214 to 32; but even of this, some explanation would have been acceptable. At Willet's Point, New York, we find in 1870-71, with a garrison of 281, 708 cases of illness, including intermittent 214, rheumatism 40, catarrh and bronchitis 68, diarrhœa and dysentery 169; while three years later a population of 260 gives 283 cases, including, of the four denominations just named, in the same order, 57, 18, 14, and 28. Newberry, N. C., shows in three years a falling off of intermittent from 274 cases in 190 men, down to 25 in 143. At St. Augustine, while the garrison was more than doubled, the number of cases of intermittent was diminished by three-quarters, and rheumatism by one-half. At Fort Lyon, Colorado, in one year, while the garrison increased only from 156 to 214, cases of catarrh and bronchitis rose from 7 to 112, and bowel-complaints from 11 to 69. At St. Louis, while population doubled, catarrh and bronchitis were divided by three, and diarrhœa and dysentery very nearly as much diminished; and these last, *again* suffered a four-fold increase. Fort Russell, Wyoming, with a garrison rising from 515 to 576, gives us in catarrh and bronchitis a rise from 39 to 297, rheumatism from 33 to 95, diarrhœa and dysentery from 24 to 114, "other local diseases" from 78 to 376, and "other diseases of this [general diseases, A.] group" from 24 to 220: total cases, rising from 287 to 1278! In two and a half

closely printed pages of interesting and valuable information about this post, the only words having the slightest possible bearing upon the remarkable differences above noted—all occurring between 1871-72 and 1872-73—are the statements that the post is a sort of distributing centre for troops, and that the garrison and the commandant have been several times changed. No reference is made to the variation of the sick-reports. We have noted many other instances of this curious sin of omission, occurring all over the country, but believe enough have been given. Perhaps we should state that the strength of garrison is expressly given as the "mean strength," for each year.

If in future some little attention be given to the interpretation of the tables, much may be added to the value of this already admirable kind of publication.

We were desirous of tracing the influence of living in casemates upon the health of soldiers, by comparing the sick-reports of troops occupying them with the reports from garrisons occupying wooden barracks. In view, however, of the extreme variations met with in the same posts, we felt that any such attempt could hardly obtain any trustworthy results. We can only give the impressions of the reporters themselves. These are very strongly adverse to casemate quarters. Their dampness is generally very great, causing iron to rust and clothing to mould and decay. Catarrhal and rheumatic affections are believed to be often caused by the chilly dampness of the air, while ventilation becomes more than usually defective.

In most cases where the ventilation of their quarters has at all attracted the attention of the post-surgeons making these reports, the testimony borne fully sustains the more general but emphatic utterances of Dr. Billings. Not only is the cubic space per man almost uniformly too small, but as a rule no provision has been made for the introduction of pure air. Doors, windows, and crevices usually form the only means of changing the atmosphere. In cold climates these are carefully closed by the men for the purpose of retaining heat. In one place "base-burning" stoves were so constructed as to allow free emission of carbonic acid gas, which so contaminated the air as to kill healthy goldfish on four different occasions after six hours' exposure. Many reports mention the foulness of the barrack atmosphere, though very few give the results of exact tests.

In this connection, we may advert to the disgraceful arrangement of the guard-houses nearly everywhere. It seems as if these had purposely been made comfortless and unwholesome, not only for prisoners but for men on guard duty. At one post cells are described as "chilly, stony dens, worthy of the dark ages." After a night's occupancy we are told that a candle placed on the floor is "nearly extinguished" by the accumulated impurities. At another post the prisoners' cells, 8 feet by 3 feet 6 inches, and 9 feet 5 inches high, have no other ventilation than a single grated aperture over the door of each, six inches square. In one guard-house fifty-six prisoners are confined in three rooms, two being 9 feet 8 inches by 8 feet 9 inches, and the third 20 feet 9 inches by 17 feet, and all 11 feet 8 inches high. The larger room has no opening save a single grating over the door. This being only three miles below New Orleans, we can readily believe that "recovery from even slight sickness" is "almost impossible" to a prisoner, without removal. A Texas guard-house is reported with ventilation for two prisoners, though usually occupied by twelve. At a

post in the warm climate of central Tennessee, two "close boxes" 11 feet by 11 feet, and 11 feet by 15 feet, aired only by auger-holes in ceilings, floors, and sides, have been made to hold "thirteen suffocating wretches." We can easily believe that "during the still, hot nights of summer the sufferings of the prisoners are very great." Perhaps the champion torture-boxes, however, are those at Fort Craig, New Mexico. These measure 5 feet 7 inches by 2 feet 10 inches, and are 4 feet 10 inches high! Eight auger-holes, and the chinks round the door, are the only sources of air and light for each cell. Several other posts have cells dependent on auger-holes for air. One "dark cell," 8 feet by 10 feet, has "no ventilation but the door;" and another, 5 feet 1 inch by 6 feet 1 inch, "only cracks in the doors."

It is true that usually these separate cells are only used for the worst cases, the ordinary "prison-rooms" being considerably less horrible. But we submit that the existence of such places is a burning shame and a disgrace upon our civilization.

One or two reporters speak out plainly against the absurd and cruel custom of denying to soldiers of the guard, while off duty or waiting their turn, any softer bed than a plank. One commandant, in deference to his surgeon's views, allowed straw-sacks in place of bare boards.

We are glad to notice that the importance of a pure water for drinking and cooking seems to be very generally realized. A number of instructive instances are reported where measures to preserve springs from contamination or to provide a supply from purer sources, have produced a marked improvement in the health of the post almost immediately. Thus at Fort Barrancas, after four or five cases of typhoid had appeared, water suspected of fecal contamination was disused, and rain-water provided instead, with the results that no more fever appeared, and bowel troubles were diminished one-half. At Fort Bayard intestinal diseases were much diminished after judicious measures taken to keep filth out of the springs, and to filter the water before using.

We learn that it is a practice in the Territories peopled with descendants of Spanish colonists and invaders, to cool drinking water by placing it in porous jars, which, placed in the shade, cool their contents by rapid evaporation from their surface. This custom is generally adopted at the military posts, and is by some surgeons deemed more wholesome than the use of ice-water.

In some forts, especially where space is very limited, as upon small islands, the device known as "earth closets" has been found perfectly successful. No other method of dealing with ordure, within casemates, has been so free from offence. At one post they were tried and abandoned, as requiring too much care and trouble; but here there was really not much need for them, as the tide washes to and fro into its privy-vault.

As most of our military stations in the Territories are at great elevations, we looked for much valuable observation as to the influence of altitude upon health, and upon disease. Very few reporters, however, appear to have devoted any attention to the physiological action of a rarefied atmosphere. At Fort Garland, Colorado, nearly one and a half miles above the sea, in the average healthy man there is a slight increase in the frequency and the depth of inspiration. Average pulse, in fifteen healthy subjects, ninety. Marked increase of heart-action follows even slight exercise. An observer at Santa Fé, over one and a quarter miles above the sea, says new comers are "almost invariably affected by a great oppres-

sion in respiration," together with lassitude. Threatenings of paralysis have also been attributed to elevation. On arriving at a post near the last-mentioned, and about as elevated, the surgeon was attacked with dizziness, confusion of ideas, mental hebetude, and headache. Temporary relief followed purgatives. Hemiplegic symptoms, with oppression of breathing, throbbing of carotids, and dilatation of pupils, then appeared; relieved by chloroform inhalations, but several times recurred, in an alarming form. Under cathartics and restricted diet, however, the attacks finally ceased. As to the moderate increase in frequency of pulse and respiration among the soldiers near Salt Lake City, Surgeon Vollum is inclined to seek its cause in the liberal use of tobacco, rather than in the rarefied air. The elevation here is 4904 feet, or less than a mile. At Fort Steel, Wyoming, normal respiration is said to be deeper than at sea-level, but not quicker; elevation 6700 feet.

Although we have probably two-score reports from elevated posts, the above notes comprise almost all the physiological observations recorded.

Concerning the influence of altitude upon disease, the amount of testimony is considerably greater, though not at all universal. Of course, the other peculiarities of the mountain climates will affect the progress of disease, in a way not always separable from the action of a rarefied atmosphere. Very great dryness of air is often present; and partly as a result of this, extreme variations of temperature between day and night. Space forbidding detail, we will simply say that while the mountain climate, combined with mountain life, very often arrests commencing phthisis and cures asthma, it usually hastens death in advanced consumptive cases, and is unfavourable to heart diseases. The extreme dryness of the air often seems directly to irritate the bronchial mucous membrane. The "sand storms" of certain localities are still worse. The very great variations of temperature are very generally credited with causing rheumatic troubles (usually subacute, and most often muscular), catarrhal affections, and bowel-complaints. The latter are often traced to exposure to the cold night air, on guard, after days of debilitating heat. One observer believes that phthisis never originates in Utah; and knows some two dozen cases of asthma wholly relieved during residence there.

A "mountain fever" is commonly spoken of. Some regard it as a form of remittent, while others incline to term it typhoid. It is of a mild type and amenable to quinia.

We are surprised to find one excellent reporter stating that erysipelas, at Fort Steel, Wyoming, 6700 feet above the sea, is undoubtedly more frequent than at lower frontier posts; and apt to complicate the most trivial injuries.

The alkaline waters of the upper Missouri are believed by Asst. Surg. Williams to be innocuous. Bronchocele, however, is very frequent among certain Indian tribes which have for generations drunk of these waters.

The intensity of summer heats, and the range of temperature at all times, are something wonderful, at many of these Rocky Mountain posts. A monthly range of 70° is common, especially in winter; and even reaches 96° !

Fort Yuma, just above the head of the Gulf of California at junction of the Colorado and Gila Rivers, is the hottest (and driest?) post in the United States. In April, May, and June no rain falls. With mercury at 105° , as it often is, scarcely any sensible perspiration appears, and the skin is dry and harsh, and the hair crispy. A temperature of

100° may be reached daily for weeks without causing illness; the *mean temperature* for July, 1870, was 98°.53. Furniture brought from the North, falls to pieces. Newspapers become brittle and require great care in handling. Eggs dry up in their shells—giving rise to the scandal that Fort Yuma hens lay hard boiled eggs. Ink dries on the pen. No. 2 Faber pencils will not make a mark unless soaked in water, and are used alternately in pairs, one in a vial of water, while the other is used till it dries. Five or six months in each year, show a maximum of over 100°, such as 110°, 111°, 112°, and so on up to 119°! According to statement of reporter, and certainly according to the tabulated returns, the post is by no means unhealthy.

A great amount of information as to the natural history of the Territories and Pacific States; and some interesting descriptions of the nobler and less contaminated aboriginal tribes, are contained in some reports. Concerning these we had designed to speak, but lack of space forbids. Especial points of interest in particular reports have been noted, but must now be reluctantly omitted.

We hope that, in criticising some features of this Report, we have not seemed inappreciative of its great value. Its faults are those of individual reporters, or more properly speaking, perhaps, are such as almost inevitably occur in doing a new kind of work. The mass of valuable observations presented is enormous. One thing, however, is sadly missed—an index. If you desire to see all that is said, for instance, about “consumption” or “phthisis,” you must turn carefully over nearly six hundred pages; and so of “elevation,” “bears,” etc. Absolutely the only guide to this ponderous volume, is an alphabetical list of the posts described.

B. L. R.

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XXV.—*Saint Bartholomew's Hospital Reports*. Edited by JAMES ANDREW, M.D., and THOMAS SMITH, F.R.C.S. Vol. X. 8vo. pp. xliv., 420; x., 82. London: Smith, Elder & Co., 1874.

THE present volume, which is announced as the first of a second series of the *St. Bartholomew's Hospital Reports*, is both more portly and more elegant in appearance than any of its predecessors, and thus tempts us to hope that the "Reports" have proved an exception to the rule which commonly obtains in regard to works of a similar nature, and that their success has not been limited to one of a scientific character.

Prefixed to the papers of strictly professional interest, is an appreciative memoir of the late Mr. Thomas Wormald, contributed anonymously, but evidently by one who well knew the man of whom he wrote. A pupil of Abernethy, Mr. Wormald seemed to have acquired many of his preceptor's peculiarities of manner, as well as his surgical doctrines. He wrote little, and was, therefore, less known out of his own circle than many surgeons of inferior merit. He was born in 1802, and died in 1873, and his connection with St. Bartholomew's Hospital, as pupil and teacher, lasted for nearly half a century.

Following our custom, we shall consider separately, the papers of *surgical* and those of *medical* interest, and shall first invite attention to a short communication *On Disease of the Mammary Areola preceding Cancer of the Mammary Gland*; by Sir JAMES PAGET, Bart., F.R.S. The condition of the areola described by Sir James Paget has been observed by him in about fifteen cases, and in each instance cancer attacked the corresponding mammary gland within two years. The disease began in every case as an eruption on the nipple and areola, giving usually the appearance of a very red, finely granular, raw surface, as if the part had been deprived of its epidermis, and not unlike the appearance of the glans penis when attacked by acute balanitis. The affection was attended by the exudation of a clear, yellowish, viscid substance, and the patients experienced a sensation of burning, tingling, or itching, but without any disturbance of the general health. The eruption in this form never extended beyond the areola, and in only one instance did it pass into a deeper form of ulceration. In other cases, in which the eruption resembled an ordinary eczema, or a psoriasis, it spread beyond the areola in widening circles or in scattered blotches. The practical inference from Sir James Paget's paper, and one which he apparently favours, though he does not draw it in stated terms, is that when these peculiar appearances of the nipple and areola are noticed, the part should be removed in the hope of preventing the development of cancer.

The next paper is on *The Treatment of Secondary Hemorrhage after Ligation of the Femoral Artery in Continuity*; by WILLIAM HARRISON CRIPPS. This is a statistical paper, founded on an analysis of fifty-three cases which the author has collected from various sources, and which he has classified according to the plan of treatment adopted. In speaking of the futility of tying

the iliac artery for hemorrhage from the femoral, Mr. Cripps relates a very striking experiment which may serve incidentally to show the opponents of vivisection, the important bearing which experiments upon the lower animals may have upon practical surgery. To illustrate the tendency of blood to pass through arterial anastomoses rather than towards the capillaries, the author says—

“If water be injected into the common iliac artery of a rabbit, it will circulate through the capillaries, returning by the vein. If the external iliac and the superficial femoral be now tied, the water will still return by the vein, only much more slowly.

“If the femoral artery be now divided below the ligature, and water still injected by the common iliac, it will be found that a greater quantity of the water will return through the cut (lower) end of the femoral than by the iliac vein. This experiment shows, at least in the case of a rabbit, that even with the iliac vein open, less resistance is offered by the anastomoses of the arteries than is afforded by the capillaries.”

The results of treatment in cases collected by Mr. Cripps may be seen in the following table:—

Mode of treatment.	Died.	Recovered.	Total.
Ligation of external iliac	12	2	14
Amputation ¹	3 (2)	3	5
Reopening the wound	7	5	12
Pressure and bandaging.	3	12	15
No treatment	4	3	7
Aggregates	28	25	53

The author terminates his paper with the ensuing conclusions, which we quote in full:—

“It would appear that of these methods of treating secondary hemorrhage from the femoral, ligation of the external iliac is under no circumstances justifiable. The operation is not only useless in arresting bleeding, but exceedingly fatal to the patient's life.

“Amputation has the merit of being recommended by the best authorities in modern surgery, but it would seem that if the patient have sufficient vitality to bear this formidable operation, he cannot be in such a condition as to forbid a further trial of pressure. Still in desperate cases, or those in which gangrene has already set in, removal of the limb may be the only chance of saving the patient's life.

“Opening the wound is a hazardous and uncertain proceeding, and the chances of success appear to be too slight to weigh against the delay, uncertainty, and danger of the operation. Possibly under circumstances mentioned in a preceding page [when bleeding follows soon after the original operation] the operation may be undertaken with a fair chance of success.

“Firm bandaging and the most carefully-adjusted pressure is undoubtedly the treatment to be adopted in these cases, and the method should be carried out with an assiduity and perseverance derived from the firm conviction that in the majority of cases it is the only treatment to be relied upon.”

The next paper which demands our attention is *On the Relations of the Histology and Clinical Surgery of Tumours, with an Account of several cases of interest occurring in the Hospital during the past year*; by HENRY TRENTHAM BUTLIN. Mr. Butlin begins his paper with an interesting sketch of what he calls the “rise and progress in the microscopic anatomy of tumours,” showing how the battle-ground has gradually changed from simple observation of *microscopic elements* to study of *structure*, and from study of structure to

¹ In one of these cases the external iliac had been previously tied.

investigation of *genetic origin*. We have so often expressed our conviction that the modern methods of classifying morbid growths are not sufficiently definite to be of much use to practical surgeons, that we may be excused from again referring to the subject, particularly as Mr. Butlin seems to us, in the following sentences, to pretty much yield the question in favour of the clinicists. Referring to Dr. Payne's dictum that the modern histologist, when asked if a given tumour is malignant, can only reply that it is of such and such structure, Mr. B. expresses the opinion, in which we quite coincide, that this view of the advantages to be derived from microscopic study is unduly limited, and then adds:—

"But in the majority of cases it is not at all necessary for the surgeon to ask for the minute characters of a tumour, in order to enable him to diagnose the case as innocent or malignant. It may even happen that when the histologist has described what is generally considered to be an innocent structure, the surgeon will be perfectly right in dissenting from the opinion as to its innocence. Ill-defined growths, not encapsuled, or only inclosed in a thin imperfect capsule—growths which affect adjacent structures, as connective tissue, skin, muscle, etc., gradually incorporating them in their continuous increase,—growths of such kinds, which are excessively vascular, require generally no microscopic examination to stamp them as likely to return, and in time to kill. It has become too much the custom to trust implicitly in minute characters for diagnosis and prognosis, even sometimes to the exclusion of general characters which are more than sufficient."

Mr. Butlin's paper is terminated with the record of four cases, one of connective-tissue (fibro-nuclear) tumour, one of spindle-celled sarcoma (recurrent fibroid tumour), one of round-celled sarcoma undergoing calcification, and one of soft carcinoma of the clavicle.

We turn next to an article entitled *Surgical Notes: Wounds and Ulcers*; by GEORGE W. CALLENDER, F.R.S. The information conveyed in Mr. Callender's communication is of rather a desultory character, and his paper is altogether hardly up to the standard which he has established for himself by his former writings. We note, *inter alia*, mention of the use of the aspirator in several cases of strangulated hernia, "but in all instances without being of any service;" a case of fatal hemorrhage from wound of the posterior tibial artery, with lodgment of a foreign body—in which case it seems to us that advantage might have been derived from the employment of Esmarch's bandage; and a fatal case of "litho-nephrotomy," in which, by enlarging a sinus,¹ a calculus weighing eighty grains was removed, though at the autopsy (the patient dying between three and four weeks after the operation) the kidney was found to contain other stones which had not been detected.

The *Treatment of Foreign Bodies in the Vitreous* is the title of a paper contributed by Mr. HENRY POWER, who appends histories of a remarkable case of pterygium, a case of anchyloblepharon, and one of opacification of the cornea without inflammation; these being, moreover, illustrated by means of a well-executed chromo-lithographic plate. In common with most modern authorities, Mr. Power favours early excision of the eye in the majority of cases in which the presence of a foreign body in the vitreous is suspected, and fortifies his position both by the record of his personal experience and by numerous quotations from the writings of other ophthalmologists. The case of anchylo-

¹ The terms "nephrotomy" and "litho-nephrotomy" should, it seems to us, be reserved for cases (such as that recorded by the author in the last volume of the Reports) in which the kidney is formally cut into, and should not be applied to operations which consist merely in the enlargement of previously existing sinuses.

blepharon reported was of congenital origin, and the abnormal adhesions were readily torn through with a slender probe.

Mr. Power's paper is immediately followed by one contributed by his colleague, Mr. BOWATER J. VERNON, and entitled *Observations on Iridectomy, with an account of 118 cases*. Excluding cases in which the operation has been performed as a preliminary step in the extraction of cataract, this paper embraces an account of all the iridectomies done in the eye-wards of St. Bartholomew's Hospital from the time of their opening in October, 1870, to the end of July, 1874. The whole 118 cases are classified in three divisions, viz.: 47 cases of iridectomy for artificial pupil; 23 of iridectomy for glaucoma; and 48 of iridectomy for iritis and allied conditions, and for the sequelæ of iritis, synechia, etc. For corneal affections Mr. Vernon does not ordinarily recommend iridectomy, though he thinks the operation may be properly tried in some rare cases of progressive ulceration.

On the Acute Arthritis of Infants is the title of a paper communicated by Mr. THOMAS SMITH. Mr. Smith has within a few years observed a number of cases (twenty-one of which he reports in the pages before us) of very acute articular inflammation occurring in young children, and presenting certain peculiarities which he thinks justify him in adding a new disease to the list which surgeons already have to deal with. The affection in question

"probably owes its distinctive features more to the time of life at which it occurs than to any essential difference between it and other recognized joint-affections. It occurs . . . within the first year of life, and is characterized by the suddenness of its onset and the rapidity of its progress and termination, whether the latter be of a fatal or a favourable kind. It is very dangerous to life, and intensely destructive to the articular ends of the bones, which, of course, at this period of life are largely cartilaginous. Lastly, . . . it rarely produces ankylosis, but leaves a child with a limb shortened, by loss of part of the articular end of some bone, and with a weakened, flail-like joint."

The affection does not appear to be in any degree dependent on the existence of a syphilitic taint, and in only two of Mr. Smith's cases was it of traumatic origin. Thirteen of the author's twenty-one cases terminated fatally. The morbid appearances of the affected bones are shown in several wood-cuts.

Though possessing a not very limited experience in the surgical diseases of children, the present writer has not himself observed any cases precisely analogous to those described by Mr. Smith, and is therefore led to believe that the "acute arthritis of infants" is an affection rarely met with in this country.

Mr. HOWARD MARSH contributes, in the next paper, *Reports illustrating the Surgery of Childhood: Strangulated Hernia, with an Analysis of 47 Cases; Umbilical Hernia; Extroversion of the Bladder; Goutre*. Mr. Marsh's first case was one of strangulated inguinal hernia occurring in a boy five months of age; herniotomy was performed on the third day of the strangulation, with instant relief to the symptoms, though the child died twelve days subsequently from erysipelas of the scrotum and abdominal parietes. From various sources Mr. M. has collected forty-seven cases of strangulated hernia occurring in children of ages varying from eight days to thirteen years; and from a careful analysis of these cases he shows that the same rule should be observed in dealing with children as with adults, viz., that one "well-ordered and careful trial" should be made to reduce the hernia while the patient is under the influence of an anæsthetic, and that if this trial fail, herniotomy should be at once resorted to.

The second case narrated by Mr. Marsh was one of strangulated umbilical hernia in a child four months old, rupture of the sac occurring spontaneously and leading to the formation of a fecal fistula. Cases reported by other

writers are also referred to, in which the hernial sac consisted of a dilated portion of the umbilical cord. Mr. Marsh's case of extroversion of the bladder occurred in a male child three years old, and the operation, which was done by Wood's method, failed completely, the patient, moreover, dying from exhaustion at the end of seven weeks. Reference is also made to another fatal case, communicated to the author by Mr. Holmes, so that with Mr. Durham's case and the four included in the table published by the present writer in the number of this Journal for April, 1874 (page 422), the number of deaths since the revival of the operation in late years is seen to be at least seven. Mr. Marsh's paper is terminated with a short account of two cases of bronchocele observed in sisters, one a child three years of age and the other less than two.

On Spontaneous Dislocation of the Femur, is the title of a paper communicated by Mr. W. MORRANT BAKER. Mr. Baker's patient was a boy four years old, an inmate of the Evelina Hospital for Sick Children. The case had at first been supposed to be one of hip-disease, but upon careful examination no arthritic affection was found to be present, but upward and backward dislocation of the femur existed on both sides. Reduction was readily effected by extension, but when the extension was relaxed the deformity was immediately reproduced. The history of the case showed that the dislocations had followed upon an injury, though after an interval during which the child was apparently well. An effort to keep the bones in place by the use of splints and continuous extension was not very successful, and eight months after admission to hospital the patient died with symptoms of tuberculous meningitis. No autopsy could be obtained. Mr. Baker compares his case with several recorded by Mr. Stanley, and with one communicated to him by Mr. T. Smith, in which an opportunity for *post-mortem* examination was afforded. In the last-mentioned case the ligamentum teres, though retaining its normal attachments, was found to be abnormally long and wide, and so far from preventing dislocation actually tended to push the head of the femur out of the acetabulum. The nature of the deformity in Mr. Baker's case is shown by means of two wood-cuts.

We next turn to a short paper by Mr. E. W. MILNER, *On Two Unusual Forms of Dislocation*. Mr. Milner's first case was one of dislocation of the occipital bone upon the atlas, with fracture of the latter bone and of the axis, and with various other necessarily fatal complications, all produced by a fall from a height of seventy feet. This case is one of much interest, and of a kind very seldom met with, there being, as pointed out by the author, only three other cases of traumatic dislocation of the occipito-atloid joint on record. Mr. Milner's second case was one of dislocation of the head of the femur directly upwards, in which reduction was effected on the sixteenth day by Mr. Savory, a previous attempt made by the same surgeon eleven days before having proved unsuccessful. The appearance of the luxated limb in this case is well shown by means of a lithographic plate.

Mr. ALFRED WILLETT contributes a *Note on some points in Surgery connected with the Patella*, in which, referring to the fact that from the anatomical connection of the patella with the tibia these bones move together, he points out the hinderance which femoro-patellar adhesions must oppose to the cure of knee-joint ankylosis, and suggests as a restorative measure subcutaneous division of the adhesions with a narrow knife, and as a means of prophylaxis an early resort to passive motion. In the latter part of his paper Mr. Willett ingeniously suggests that the splitting fractures met with in the lower articulating extremity of the femur are caused by the application of force to the patella (as by a fall on the knee), the peculiar shape of the bone well adapting it to act as a wedge in splitting off one or both condyles.

In the next paper to which we shall invite attention, Mr. FREDERICK A. HUMPHRY describes a case of *Excision of the Astragalus and Os Calcis*, the operation having been performed by himself upon a child between nine and ten years of age. The result was in every way satisfactory, and Mr. Humphry's case is quite worthy of being recorded, but surely the editors or somebody ought to have called his attention to the cases published by Wakley, Heyfelder, Teale, and other surgeons, and thus have saved him from the ingenuous remark that "I am not aware that the calcis and astragalus have been both [heretofore] removed."

Mr. JOHN LANGTON narrates a case of *Large Hydrocele of the Sac of a Femoral Hernia, treated successfully with a Seton and Incision*. Mr. Langton's patient was a woman fifty years old, who for sixteen years had suffered from a femoral hernia, which, during a considerable portion of this time, had been irreducible. About three years, however, before she came under Mr. L.'s observation, the greater part of the hernia was reduced, leaving a small nodular mass, which evidently consisted of omentum, and which by plugging the neck of the sac led to its distension by fluid, constituting the condition known as hydrocele of the part. As repeated tapplings only seemed to aggravate the disease, a seton was established by drawing four threads of ligature silk through the lower portion of the sac, and after suppuration had been fully established, the case was treated by making a free incision, which led to a perfect cure. Although hydrocele of the sac is, comparatively, a not very unusual complication in cases of inguinal rupture, it seems to be very rare in connection with femoral hernia: at least Mr. Langton tells us that this was the first instance met with in nearly seven thousand cases of femoral rupture, noted in the records of the Truss Society, during eighteen years.

Cases in Surgery, by WILLIAM NEWMAN, M.D., F.R.C.S., is the title of a short paper which embraces the records of a case of successful excision of the hip for hip-disease, in a man forty-one years of age, and a case of gunshot wound of the knee of twenty-five years' standing, in a man fifty-five years of age, successfully treated by removing the lower half of the patella, which was in a carious condition, and by extracting several small shot which were lodged in the inner condyle of the femur.

A Case of Syphilitic Disease of the Patella, by HOWARD MARSH, forms the last paper of special interest to surgeons. This case occurred in an out-patient, who was kept in a comfortable condition by the continued use of iodide of potassium, and it is recorded merely on account of its comparative rarity.

The volume terminates as usual with the *Statistical Tables of the Patients under Treatment*, during the year 1873, compiled by the Medical Registrar, Dr. W. AINSLIE HOLLIS, and the Surgical Registrars, Messrs. HENRY T. BUTLIN and EDWARD MILNER. These tables are very elaborate, and furnish, in the space of 70 or 80 pages, a large amount of condensed information.

J. A., JR.

We shall now consider the medical papers in the volume.

The first of these is by Dr. SAMUEL GEE, and is entitled *Remarks upon Typhoid Fever*. In it the author discusses various subjects connected with the disease, such as the temperature, duration, complications, and methods of treatment; showing us that the habit which is pretty generally diffused of noting the temperature in the mornings and evenings may frequently lead us into error in regard to its variations. Thus in two cases in which hourly observations were made during the whole course of the attack, the minimum occurred on no day at 8 A. M., or the maximum at 6 P. M., hours at which the ther-

mometer is generally used. In his remarks on the treatment of the disease, he quotes the writings of Sydenham and Currie in evidence that they fully understood the importance of moderating the heat of the body, and that they used cold water for this purpose. Among the complications which Dr. Gee discusses are meteorism and ileus. Both of these depend upon a paralytic condition of the muscular coat of the bowel. The latter fortunately is of infrequent occurrence, but the former is sufficiently common, and is, so far as he is aware, very little under the control of remedies. When speaking of the duration of the disease, he takes occasion to express his conviction that true relapses occasionally happen, and are sometimes sub-intrant, by which he means a recurrence of the specific fever before the first attack has fully run its course. In this way he explains the elevations of temperature which are sometimes observed, and which are generally followed by a continuance of the fever just at the time when it would appear defervescence was about to take place.

A communication from Dr. HENRY M. TUCKWELL *On Clotting of the Blood in Gout and Chlorosis*, comes next. In it the author refers to an article by Sir James Paget, published in the second volume of these Reports, in which "attention was drawn to a group of cases in which persons either of gouty constitution, or with gouty inheritance, become the subjects of a certain form of phlebitis, which attacks by preference the veins of the lower limbs." Besides gout, he continues; there are yet other abnormal states of the body, in which the blood is liable to coagulate either in the veins or in the cavities of the heart. One of these is chlorosis. But there is a difference in the manner of coagulation in this condition and in gout. In gout it is, as far as the author's observation goes, the superficial veins which are first obstructed, and nine times out of ten, the veins of the legs. He has once only seen the superficial veins thus affected in the arm of a man, whose family history suggested gout as the cause of the clotting. From the superficial veins the coagulation creeps up toward the larger veins, which become last of all involved. In chlorosis, on the contrary, the clotting will take place haphazard in any vein—in the femoral veins, the cerebral sinuses, or even in the cavities of the heart. He considers, moreover, that in gout the veins themselves are inflamed prior to the coagulation in them, that in chlorosis there is no such preparatory phlebitis recognizable. Hence from this point of view, he says, we should speak of gouty phlebitis and chlorotic thrombosis. The seven cases which he reports, illustrating his views on this subject, possess, we think, unusual interest.

Dr. TUCKWELL is also the author of a paper *On Acute Yellow Atrophy of the Liver in Children*, in which he gives the clinical histories of three cases of the disease, together with the results of the post-mortem examination in two of them. These show that the disease is essentially the same whether it occurs in children or in adults. It appears to be, however, very rare in the former, for it is alluded to in but very few of the leading books on the diseases of infancy and childhood. Dr. West has seen only one case—one of those recorded in this paper. In all the cases the children had been sick for about two weeks with what appeared to be an ordinary attack of jaundice of moderate severity, when alarming symptoms suddenly occurred, death taking place forty-eight hours later. The autopsies revealed the presence of fatty degeneration of the liver, heart, and kidneys, and the author is inclined to believe that a careful examination would have revealed the presence of the same condition in the brain. In two of the cases the liver was distinctly enlarged at the beginning of the attack, so as to reach two fingers' breadth below the arch of the ribs. The author calls special attention to this, believing, as he does, that the atrophy is always preceded by an enlargement.

Dr. Tuckwell discusses at some length the various theories which have been proposed to explain the pathology of this disease, none of which he finds altogether satisfactory, closing by quoting Traube's cautions, saying that "the time is not yet come for the exact solution of this question." He is evidently inclined to place it among the diseases of the nervous system, regarding the lesions of the liver as a part only—and perhaps, as may hereafter be proved, not the most important part—of some general, and as yet little understood, disorder of the body.

Dr. DYCE DUCKWORTH contributes two papers to the volume. In the first of these, entitled *Notes upon some Forms of Hepatic Enlargement*, he considers the following diseases: hypertrophic cirrhosis; lardaceous infiltration; syphilitic affections; enlargement with chronic jaundice; so-called peculiar enlargement with chronic jaundice and xanthelasma; and lastly, enlargements due to influences of residence in tropical climates. He contends that there is a form of cirrhosis of the liver in which the enlargement is not merely primary, but is permanent, and which is more apt to occur in beer than in spirit drinkers. The breath in this form of cirrhosis has a peculiar odour, which it is difficult to describe, but which is never met with in the more usual form of the disease. The author alludes to several cases in which lardaceous livers were observed to undergo a diminution in size after the condition had existed for some time. In regard to a connection between xanthelasma and diseases of the liver, he says the existence of this is by no means proven. Facts are recorded which show that this skin disorder may exist not only in conjunction with chronic jaundice, arising from different sources, but also that it may be present even where there is no manifest hepatic derangement.

Dr. DUCKWORTH's second communication is one of a series of *Clinical Observations upon Certain Skin Diseases*. In this paper he reports an interesting case of Elephantiasis Græcorum, in which the use of Gurjum Balsam both internally and externally was found to be followed by a great improvement in the patient's condition. Among the other cases reported are one of erythema nodosum, occurring in a child aged eighteen months, and one of herpes zoster, occurring in the course of facial neuralgia, and after arsenical treatment. The writer of this notice saw the same complication in two patients who were taking Fowler's solution for some of the consequences of malarial poisoning. The author also makes a few remarks "On the Treatment of Strumous Abscesses by a Carbolyzed Catgut Seton." The plan he pursues is to transfix the fluctuating tumour with a needle bearing a catgut thread. The latter being drawn through the longest axis of the swelling, the two ends are to be tied together and left, seton fashion, over the abscess. A poultice is next to be applied for two days or more. Usually within forty-eight hours it is found that the abscess has evacuated itself. The special advantages claimed for this method are its simplicity and the almost absolute certainty that no unsightly scar will ensue.

Dr. W. M. CHURCH contributes some *Notes on the Hereditary Character of certain forms of Xanthelasma Palpebrarum*; his observations leading him to the conclusion that the macular form of this disease depends often, if not always, on an hereditary predisposition, and apparently never on derangements of the liver, or on the occurrence of sick headaches, or of dusky pigmentation around the eyes from other causes. He thinks it not unlikely, on the other hand, that the tubercular form may be caused by changes in the vascularity of the parts due either to local irritation or functional derangement of the viscera. It is rather singular, that, in the hereditary as well as in other forms of the disease, females appear to be much more frequently affected than males.

The statistics of a xanthelasmic family who came under the author's obser-

vation, show that of five males who attained the age of forty or upwards, only one was the subject of this disease. The females, on the contrary, who attained a similar age, were twelve in number, and of these no less than five, or nearly one-half, were xanthelasmic, a far larger proportion than is met with in persons of the same age who have suffered with megrim or liver derangement.

Dr. J. WICKHAM LEGG, in an article *On Paroxysmal Hæmaturia*, gives a very fair *resumé* of all that has been written on the subject of this curious disease. While he regards exposures to cold as a frequent exciting cause of the attacks, he has not been able to discover from the records of cases, that the occupations of the patients were, in the majority of instances, such as would render them more than usually liable to such exposures. In about a third of the cases, it is said that the patients had before the onset of the hæmaturia suffered from ague. In another third, nothing is said on this head; and in the remainder, the absence of ague, or exposure to malarious influences, is distinctly affirmed. In a few cases the presence of syphilis has been noted, and in several there is a history of rheumatism or rheumatic pains. Most of the cases come from England; two from Germany, two from France, and one from Russia. Indian physicians are familiar with the disease, which is said to be unknown in Paris, Berlin, and Rome. It would seem also to be common in hot climates, and where malaria is abundant.

Dr. Legg had the opportunity once of examining, microscopically, the urine of a patient suffering from an attack of hæmaturia immediately after it was passed, and had no difficulty in recognizing numerous red blood corpuscles. Next day he examined the same specimen of urine, but failed to detect in it a single corpuscle. He is hence inclined to think that the urine has a solvent action upon the corpuscles, and is disposed to attribute the failure of observers generally to detect them in the urine, to their having allowed too long a time to elapse before making the examination. The urine is almost invariably free from albumen between the paroxysms; but the amount is rather greater than in health, while the urea is slightly below the average. The disease is referred by many physicians to the kidneys, by others it is thought to be of constitutional origin. The author discusses these two theories without announcing his adhesion definitely to either. He recommends antiperiodic doses of quinia to ward off the attacks, and suggests that patients should wear flannel and protect themselves against exposure. A full bibliography is appended.

Mr. NORMAN MOORE contributes *Two Observations on Children*, in which he records: 1st. A case of pityriasis rubra. There was no marked peculiarity in this case of skin disease except the age of the patient, which was only nine years. Devergie asserts that it rarely appears before the age of forty. So far as the author can discover, no other case has been described in a child. 2d. Mr. Moore reports two cases in which cup-shaped depressions in the chest coexisted with enlarged tonsils, and in which the deformity gradually disappeared after the removal of the tonsils. This paper is illustrated by cyrtometrical tracings of the thorax in these cases, both before and after the operation.

Dr. J. WICKHAM LEGG reports several *Cases in Morbid Anatomy*; the most interesting of which is one of Addison's disease. Notwithstanding a most diligent search no supra-renal capsule could be found on the right side, its place being taken by a mass of yellow fat, somewhat tougher than the surrounding fat, into which an artery from the right renal, at its branching from the aorta, could be traced. On the left side there was found a black body, as thin as paper, of the shape of the supra-renal capsule, and near its usual place. Other interesting cases are: 1. Abscess of the left lobe of the liver finding its way into the peri-

cardium and right pleura, and, 2. Hydatids of the liver, omentum, and rectovesical pouch. Jaundice. Xanthelasma of the tongue, eyelids, and skin.

Dr. T. LAUDER BRUNTON, in introducing the report of two *Cases of Exophthalmic Goitre*, gives a short history of this disease, in which he omits to give due credit to Flajani, of Rome, whose observations antedate those of Parry, Graves, and Basedow. In the first of his cases the prominence of the eyeballs and enlargement of the thyroid gland occurred paroxysmally, being accompaniments of what seem to have been from the description epileptic convulsions. In the second case the disease was complicated by diabetes, a disease which the researches of Cyon, Eckhard, and Pavy have shown to be closely associated with morbid conditions of the third cervical ganglion and of the nerves passing through it, the very part, indeed, to which the nervous disturbances in exophthalmic goitre have been attributed. In this case there was the loss of consensus between the movements of the eyeballs and the upper eyelid on which Graefe laid particular stress, and which was ascribed by him to disturbed innervation of the lids, and especially of the levator of the upper eyelid which is partly supplied by the sympathetic.

Dr. Brunton believes that the palpitations in this disease depend upon irritation of the accelerating nerves of the heart, that the enlargement of the thyroid is owing to dilatation of its vessels, either in consequence of direct paralysis of the vaso-motor nerves or of inhibition of these by others, and that the protrusion of the eyeballs is owing to increased fulness of the bloodvessels in the orbit. The treatment, which he says has given the best results, is the use of digitalis and veratria with galvanism to the neck; the current being made to pass through both sympathetics. Iron he has found to increase the palpitations to such an extent that its employment can rarely be continued.

We shall give Dr. W. AINSLIE HOLLIS'S conclusions in regard to *The Therapeutic Action of Vesicants* in his own words.

"We may consider it proved for clinical purposes: 1. That the local action of blisters consists in first diminishing, and subsequently in destroying, the vitality of the parts with which they are brought in contact. 2. That this local action is also depletory. Whilst increasing the amount of blood in the tissues immediately under the blistered surface, it renders the deeper subjacent structures very anæmic. 3. That, besides the depletory action, blisters influence the system generally, depressing the heart's action, slowing the blood-stream, and cooling the temperature of the body. These results are probably due to the reflex action of the central nervous system."

It is more than probable, he adds, that many, if not all, the therapeutic advantages of a blister may be obtained by the application of less powerful epispastics.

Dr. REGINALD SOUTHEY proposes *Iodic Acid as a Test for Strychnia*, believing it to be much more delicate than the tests in general use, because all these substances, either in solution or in mixture with fluid, possess colour in themselves. Although it is not one single colour, but a play and successive change of colours that signify the presence of strychnia, still a colourless test-solution appeared to him a desideratum. A saturated solution of iodic acid, when warmed in contact with strychnia, evolves an invariable pink-rose tint, which lasts for some little time—an hour or more—and gradually fades out through flesh to a fawn-coloured substance. The author was able to detect, by means of this test, the presence of strychnia in the urine of a dog who had been poisoned by a quarter of a grain injected hypodermically.

Dr. Southey recommends as *A New Test for Opium* a saturated solution of molybdic acid in pure sulphuric acid. The reaction is due to the morphia in

the opium. The best mode of proceeding is to place, by means of a glass rod, a drop of the suspected fluid side by side with a drop of the test-fluid upon either a porcelain slab or a slip of glass laid upon white paper. At once, when the fluids are brought in contact, if morphia or any of its salts be present, a beautiful deep maroon colour will be presented. This colour changes after a while, becoming first deep purple, and then gradually losing its red element, and becoming shortly dark and later a brighter blue, which lasts for several hours, but gradually fades. The reaction is obtained with a single drop of tincture of opium.

Dr. REGINALD SOUTHEY, in addition to the communication just noticed, reports a *Case of Acute Bright's Disease treated by Sulphurous Acid and Vinegar*. The patient was a woman aged 41 years, in whom the symptoms of the disease developed themselves shortly after nursing a severe case of scarlet fever. In consequence of the failure of all the more usual remedies to control the excessive sickness of stomach from which she suffered, Dr. Southey yielded to her craving for horseradish sauce. Finding that this acted well, he then employed the following prescription: Acid. sulphurosi, ℞xx; sp. armorac. comp. ℥j; aquæ destil. ℥j, which was taken every four hours. The active agent in this combination he believes to have been the vinegar, and he has since employed dilute acetic acid in drachm or half-drachm doses with great success in the persistent sickness of the uræmic state. Dr. Southey also attributed very good results to a magnesia mixture possessing diuretic together with slight purgative properties, the formula of which is as follows: Potassæ bitart. ℥j; magnesiæ sulph. ℥j; aquæ menth. pip. ℥j; and to this he added one drachm of the compound spirit of horseradish, which he believes makes it more acceptable to the stomach. The patient made a good recovery, notwithstanding her age.

Dr. T. CLAYE SHAW, at the conclusion of an article *On the Clinical Value of Expression in the Insane*, says:—

"The main thing proved by the insane is, that expressions and gestures may be acquired, which have no correspondence in the sane, and that these gestures are susceptible of a true physiological meaning. That it would be an error to treat them clinically in accordance with the expression; for at times a stimulating line would be pursued when the opposite was really indicated. That they afford the clue to the real mental state in some enthusiasts and ecstatic religionists among the sane. That they give no grounds to conclude that whilst expression of some form may have been at first strictly conservative in obedience to two, at any rate, out of Darwin's three laws, it may not, on the other hand, have been artificially adopted for secret reasons, the fact that special circumstances develop special means of expression being proved by the gesture-language of deaf-mutes."

Dr. JAMES ANDREW contributes the notes of five *Cases of Rheumatic Fever with High Temperature*, four of which were under his own care. "These cases," he says, "were not merely the worst in a severe epidemic of rheumatic fever, differing from the others occurring at the same time in degree rather than in kind. On the contrary, the prevalent type of the disease was, on the whole, a mild one, and these cases stood out in marked contrast to the rest, their high temperature, striking as it was, being by no means their most important character." There was nothing in the history and condition of the patients at all unusual; the only circumstance to which he could attribute any weight was the extreme heat of the summer during which they occurred. He refers to the facts that it is distinctly stated in Dr. Hermann Weber's cases that the temperature of the sick room was excessive, and that Drs. Murchison's and Sanderson's cases also all occurred during the hot months. In the con-

clusions appended to the paper, he says that hyperpyrexia in rheumatism is the effect and not the cause of some nervous lesion; for nervous symptoms identical in kind with those of the hyperpyretic period were observed in all his cases before their rise of temperature took place, and have been observed in cases in which the temperature never reached, even for a short time, any extraordinary height. He thinks it impossible that embolism of some supposed nervous centre can be the cause of the hyperpyrexia. Of all the means of reducing the temperature, he regards the tepid bath as the best. It is free, he says, from the risks attending immersion in cold water, and is vastly superior to the local application of ice, to packing in wet sheets, and to the internal administration of quinia. He does not look upon the existence of pericarditis or pneumonia as a contraindication to the use of the bath.

Dr. JAMES ANDREW contributes a second paper, the subject of which is *the Treatment of Rheumatic Fever by a Non-nitrogenous Diet*, in which he gives the results in eight cases of acute rheumatism, the patients being limited to a diet consisting solely of arrow-root biscuits and thin water arrow-root, of which they were allowed to take as much as they liked. In two cases only were any other drugs employed, except blistering fluid to the præcordia when the heart was attacked, opium in moderate doses when the pain was severe, and an occasional purge. This treatment he continued until after the pains had subsided, with the view of diminishing the amount of urea and uric acid in the urine. In his concluding remarks he expresses the belief that the observance of a non-nitrogenous diet promises better results in rheumatic fever than any other treatment. The average time that his cases were under treatment before the pains completely disappeared was 3.75 days—the longest being five, the shortest two days; and in none did any cardiac affection begin or make progress after admission into the hospital. He takes care to add that this treatment is only suited for young patients whose powers of nutrition are yet unbroken. He confesses an error of judgment in having applied it to two of the cases of rheumatism with hyperpyrexia reported in the paper just noticed.

The volume, which we think a valuable one, closes with the Proceedings of the Abernethian Society for the previous year, and with the usual statistical tables, both medical and surgical.

J. H. H.

ART. XXVI.—*Transactions of American State Medical Societies.*

1. *Transactions of the Ninth Annual Meeting of the Medical Association of the State of Missouri.* Held at Jefferson City, Missouri, April 20 and 21, 1875. 8vo. pp. 81. Kansas City, 1875.
2. *Proceedings of the Florida Medical Association.* Sessions of 1874-75. 8vo. pp. 57. Charleston, S. C., 1875.
3. *Proceedings of the Third Annual Session of the Medical Society of Washington Territory.* Held in the City of Seattle, on 22d of October, 1874. 8vo. pp. 34. Olympia, 1875.

1. WE notice the adoption by the Missouri State Medical Society of a new by-law concerning the duties of the publication committee. All papers submitted to the committee are to be examined at once, and a report to publish or not to publish made to the Association before the close of its session. Whether or not this decision is final, or liable to be reversed by vote of the Association, we are not told. One or two objections to the new rule may be

found in the hasty manner in which responsible, and, at times, very laborious, duties must be performed, and the consequent debarring of members of the committee from participation in the general employments of the session. So long as the essays to be judged shall be few and brief, these drawbacks may not be serious; but with a large amount of matter they would become very grave. Nevertheless, the mere fact of attention being turned in this direction is a good and hopeful sign. It certainly indicates a desire to discriminate, and is hence worthy of all praise.

The present issue contains two essays concerning *anæsthetics*. The first is a summary of the facts and knowledge of the subject. The other deals with anæsthesia in midwifery. Both writers, Dr. Trader and Dr. Todd, have made some use of the system of circular letters of inquiry, and both must have given much labour and research to their work. The latter, however, is by far the more elaborate paper. It contains a large amount of condensed information as to the frequency of the use of anæsthetics, here and in Europe, by leading obstetricians and authorities, together with the circumstances, methods, and particulars, and the varying opinions and experience derived from books and journals, and especially from two hundred and sixty-two correspondents. The paper is well worthy the attention of gentlemen interested in this important subject.

Cases of *suppurative disease of the middle ear*, followed by cerebral trouble, are reported by Dr. Spencer, with a view to showing the extreme importance of careful treatment at the very beginning of the aural symptoms.

Laryngeal disease in its relation to pulmonary phthisis is the subject of an article by Dr. Glasgow. He regards the throat trouble as generally a manifestation of a scrofulous constitution, but not otherwise in any direct necessary connection with phthisis.

2. The pamphlet before us contains the records and proceedings of two annual meetings in January, 1874, and February 1875, of the Florida Medical Association, together with a somewhat elaborate address by the President, Dr. Baldwin, upon the *Climatology of Florida*. Several other papers were read at the meetings upon subjects of much interest. The association is a new one—this being the report of its first sessions. Judging from the matters discussed and the committees appointed, the organization begins with high aims and in a good spirit. We wish the new society the highest success in its efforts to elevate our profession and to benefit the public.

The article upon the climate of the State seems to exhibit considerable acquaintance with meteorological science. As to the soundness of the author's views and inferences regarding the laws of storms, and the propriety with which they are here applied to explain local phenomena, we are wholly unable to judge. Some statements as to more familiar matters, however, tend to inspire a little distrust. Thus we are told [page 25] "the variation of the distance of the sun from the earth, however, produces no effect on the different seasons, as many suppose, *since the rapidity of motion or the shorter duration of proximity to the sun just compensates for the greater intensity of the sun's rays, due to the near approach.*" To say the least of it, such a mode of expression is vague, unscientific, and adapted to mislead. Again we read, just below, that, "owing to the spherical form of the earth, the sun's rays strike it *obliquely at all places, except those over which the sun is vertical*, and where his rays are perpendicular, and it is these *vertical rays alone that produce results.*" Hard doctrine to believe in the latitude of Philadelphia in these sweltering July days: we are sure there are no vertical rays, but we have thought that

such as struck us were not wholly devoid of results! The same faulty expression is repeated where he speaks of the "sum of all the vertical rays" of the sun "received on any parallel of latitude." Of course no parallel outside the tropics receives any such rays, and no point anywhere receives such, except for an instant, twice yearly. We do not for a moment believe that our writer's ideas are as inexact or incorrect as such phrases would indicate. He may very probably have a very clear and correct knowledge of his subject. But surely it is not unreasonable to expect of a scientific writer some attention to exactness and accuracy of language, especially when dealing with a new and difficult science. If we seem to lay undue stress upon a few unfortunate expressions, our excuse must be a sense of disappointment at being forced to mistrust in any degree an apparently able and very laborious paper upon a subject of the greatest interest. It is only just, also, to add that some other portions of the essay seem to us to be characterized by clearness and accuracy, while the whole of it is readable and attractive.

3. This modest pamphlet contains the records of the third yearly session of the Medical Society of Washington Territory. To organize, and to hold regular meetings in a region so new, thinly populated, and but poorly provided with railroads, is creditable to the profession.

A case of *Tetanic Symptoms following Cranial Fracture*, successfully treated by heroic doses of hydrate of chloral, is reported by Dr. A. H. Steele. There was depression of a semilunar fragment, some five inches by two and a half, involving the posterior and superior portion of both parietal bones. Dura mater pressed, but not stated to be wounded; considerable hemorrhage from both ears, and vomiting shortly after injury. Patient very restless, though semi-comatose, requiring two men to keep him in bed. Pupils natural, skin cool, and ashy-hued; pulse 48, and regular. Attempts to elevate bone through the scalp-wound, failing at the place of accident, the patient was removed by open boat and steamer to the nearest town, getting wet on the passage. Here the depressed bone was raised, twenty-six hours after injury. Hebetude diminished, and pulse came up six or eight beats. At 6 P. M., some four hours later, pulse was 58; restlessness very great; opisthotonos evident in neck, trunk, and legs, with great stiffness of jaw muscles. Fifteen grains of chloral, twice exhibited, having little effect, thirty were soon given, with some relief, and continued every two hours. Patient got some sleep, and was much more quiet. Pulse at 6 A. M. 68. Rigidity not much changed. Chloral ordered only every four hours; broth enema. Slept most of day, but became restless again at night. Next day had milk-punch, beef-tea, and enema of castor-oil; pulse 72; chloral less frequently given. The following day ten grains of bromide of potassium every two hours, was ordered. Five days later, pulse 66; temperature 96; urine abundant, involuntary, sp. grav. 1001 [?]. Discharge of blood and pus from both ears had been constant. Hearing somewhat impaired, but improving. Much more quiet. Next day, or eleven after accident, tried to walk, but staggered, and involuntarily *moved backward*. By a determined effort, however, he succeeded in going forward in a zigzag manner. Pulse and temperature unchanged—66 and 96°; urine as previously. Under frequent cathartics, and the bromide in diminishing doses, continued gradually to improve, though with slight mental dulness, and some retinal congestion. Eight weeks after injury, reported himself ready to resume work. Functions were regularly performed, and he seemed in fair health. There was, however, some lack of activity and warmth in the left limbs. At date of report, six months after wound, was working as brakeman. In the

first twelve hours 180 grains of chloral were exhibited, and the same amount again in the following twenty-four hours. The influence of the drug was marked, and is believed to have prevented the full development of tetanus.

A non-united fracture of the leg, successfully treated by Brainard's operation, is reported by Dr. Waughop.

The most striking feature of this publication is its terrible indictment of the Territorial authorities for the shameful provision made for their insane. This comes from no less responsible a source than the resident physician of the asylum, who, after reading his statement, placed the resignation of his office in the hands of a committee appointed by the Association to confer with the Governor, and to urge a thorough investigation. A resolution was also passed, sustaining Dr. Willison's views and his course; and affirming that personal self-respect and professional dignity alike forbade a physician to continue in the position to which existing regulations of the asylum would degrade him.

The patients are "farmed out" to the lowest bidder—delivered over to the tender mercies of a "contractor," who takes them as he would a bridge or paving contract, to make all he can on the job. To this man the physician is subordinate, having absolutely no function or authority beyond prescribing. Thus the supreme control, instead of being lodged in the hands of an educated medical man, whose professional spirit and pride, as well as his interest, all prompt him to such measures as shall promote cure, and secure quiet, order, comfort, and contentment, is vested in a man of a class notoriously dead to all motives but the love of gain, and whose interest bids him keep patients, and not to cure them. He only, hires and discharges attendants, provides food, clothing, and service. To expect from him any expenditure of money or labour to promote cheerfulness or improvement would be the height of absurdity. Now, how Dr. Willison can speak in the calm and temperate way he does about the results of such management we can scarcely comprehend. Not a day can have passed without bringing before his eyes instances of lost chances of recovery, shamefully improper treatment, cruel neglect of means to cheer the sad and relieve the suffering, and a general heartlessness of management more suggestive of a dog-pound than of a hospital. But with remarkable self-control he calmly points out the necessary results and workings of the system, rather than dwells upon individual instances such as must have made his blood boil time and again.

Upon the "sanitary, hygienic, dietetic, or moral management," Dr. W. tells us the physician "has no voice." Over the attendants, on whom so largely depend the welfare of patients and the success of treatment, he has no control whatever. "An ignorant, inexperienced person, formerly an ordinary farm labourer" . . . "has authority over both male and female patients, with absolute authority to lock up, or put in irons, or use any manner of restraint that his brutal fancy may suggest, to punish patients who do not conform to his crude ideas of proper deportment." In the interest of economy, a partition between the two male wards was torn down, thereby destroying the only opportunity for classifying patients, in order to save the wages of one attendant. Dr. Willison's earnest appeal for the preservation of his only means for separating the quiet, decent, and convalescent classes from those which are noisy, quarrelsome, or repulsive in habits, was "treated with silent contempt." Just fancy the results of placing patients recently attacked, not utterly maniacal or demented, and accustomed to the decencies and proprieties of life, in close, constant, and unavoidable contact with such a heterogeneous mass of degraded misery

The system of attendance upon the female patients is simply shameful and horrible. A "matron" is supposed to exercise a general supervision over them, to see that they are dressed in the morning, and sent to bed at night. If, however, any woman-patient becomes "refractory" at any time, she is turned over to the male attendants to "handle." With the implied assurance that his suppositions are perfectly liable to become actual facts, Dr. W. pictures to us a tender, refined young girl, idolized by her parents, sent to the hospital as the surest means of cure, and there "entrusted to the care of coarse, ignorant male attendants . . ." "recruited from the ranks of second-class restaurant waiters or discharged sailors" . . . "stripped of her clothing, and, in a perfectly nude state, put into the bath-tub by rough, uncouth men." Can it be possible that people of the same country and the same race that in nearly every State have provided so nobly for its afflicted members, can for another day tolerate such brutishness?

The diet of the patients is prepared by a Chinese cook, with help from patients, without any regard to the views and desires of the physician.

Knowing the governing principles of the asylum, we can readily believe the Doctor's statement that the benefits of out-door labour are extended to patients with reference to the profit of the contractor rather than that of the workers. Not those who need work most, but those who will accomplish most, and give least trouble to the overseer, are taken out.

It is passing strange that in this age and country, argument should be needed to show that the best and most enlightened treatment of insanity is the truest economy to the State. But the narrow and mistaken policy of this Territory would seem thus to indicate. Accordingly, Dr. Willison quotes largely from the best authorities to prove the financial gains resulting from the earliest, most universal, and most skilful treatment of her insane by each and every State.

The protest is earnest and manly. The positions taken as to the real needs of the insane, and the best ways to meet them, are sound and just. We most fervently hope that this paper, emphasized by its writer's resignation, and backed by the committee of the Society, and the influence of its Fellows, may awaken public sentiment to a sense of the sin, shame, and impolicy of existing arrangements.

B. L. R.

ART. XXVII.—*Reports of American Hospitals for the Insane.*

1. *Fifty-eighth Annual Report on the State of the Asylum for the Relief of Persons deprived of the Use of their Reason.* 8vo. pp. 34. Philadelphia, 1875.
2. *Thirty-second Annual Report of the Managers of the State Lunatic Asylum, Utica, New York, for the year 1874.* 8vo. pp. 74. Albany, 1875.
3. *Annual Report of the New York City Asylum for the Insane, for 1874.*

1. HAVING so recently noticed at some length the improved means of usefulness now possessed by the *Frankford Asylum*, we need only commend, in passing, the humane and sensible views upon treatment here presented by Dr. Worthington.

Reading the acknowledgment of a weekly gift of flowers, placed in the wards by a manager, we are reminded that we have read, heard, or dreamed of managers who transported flowers in the opposite direction; of green-

houses, hot-houses, aye, and gardens, whose produce was deemed much too choice to be wasted upon miserable lunatics, but was preserved with jealous care for appreciative weekly visitors. Surely this coveting of solitary ewe-lambs must occur only in distant lands; surely not in this country—or city! But it will do no harm to pray that our helpless, mind-beclouded brethren may find a few more managers and neighbours like the large-hearted Friend at Frankford.

Bequests of \$5000 and \$1000, with a gift yielding \$518 yearly for the help of needy patients, are acknowledged. The last is from a generous lover of his fellow-men, who prefers to deal out alike his smaller benefactions and his munificent endowments with his warm, living hand. Long may he live to enjoy the blessedness of giving, and to provide a much-needed example to men of wealth, to show the superiority of living charity over posthumous beneficence!

2. The awful responsibility, often lightly assumed, attaching to those persons who remove from hospital restraints patients known or suspected to be dangerous, is the text for some earnest and judicious remarks by Dr. Gray, of the Utica Asylum, in the report before us. Three sad cases from the last year's experience are mentioned in illustration. Two committed suicide immediately on being set at large. The other patient delayed taking her own life long enough to attempt by poison to destroy her son and her husband. Every medical man who has been connected with insane hospitals will recognize the reality and frequency of proceedings such as Dr. Gray deprecates. The superintendent is informed by visiting friends that they have concluded to take home their insane relative. If he or she happen to be of homicidal or suicidal tendencies, or possessed with delusion likely at any time to break out into terrible violence, and the physician remind them of past experience, or explain his reasons for future apprehension, it often makes no impression whatever. They "guess they can look close after him," or think "he wouldn't hurt the folks round home," or opine that the "change will do him good." The most solemn warnings are as ineffective against their purpose as Dame Partington's broom against the Atlantic Ocean. Frightful risks are taken with an ignorant self-confidence that is amazing. It certainly seems as if legislation ought to protect society from the terrible dangers of presumptuous ignorance and reckless selfishness, as displayed in this manner.

Interesting historical notes are presented of the steps by which the pathological investigations of this asylum have attained to their present excellence of method. The microscope and photography together are now doing wonders for the pathology of insanity; and Utica may well be proud of her pre-eminence in the use of the new facilities.

3. Dr. Macdonald, the writer of the Report of the *New York City Asylum for the Insane*, has held his present superintendency only since August, 1874. It is obvious that he has entered upon his work with a desire and intention to correct abuses and make improvements. We heartily wish him success; but knowledge of the experience of other good and earnest men, who have tried to do their duty in municipal institutions, almost forbids hope. It is true he has already made some important reforms; so we will fervently hope that he may be allowed to maintain these and add others.

A vicious system of furloughs, almost uniformly hurtful to patients in such circumstances of poverty and degradation as surround the homes of this class, has been done away with. The employment of degraded women, from the penal institutions, to do the ward work, has also been discontinued. The Dr.

found these lowest and vilest of women "in constant and close contact with patients and attendants." During the few days this was allowed to continue, he saw abundant evidence of the degrading influences produced by the revolting behaviour of these women. Their banishment met with opposition from the attendants; which fact shows the wretched material for attendants provided by New York politicians.

Here again we find an earnest protest, on both humane and economical grounds, against too great parsimony. With better diet and better general provision, Dr. Macdonald believes many men now life-inmates would have been well and self-supporting. He says plainly that his own patients receive food insufficient in quantity and of too limited a variety. Of course, the wards are over-crowded, in the proportion of 673 to space intended for 423.

Dr. Macdonald urges the enforcement of a law, already on the statute-book, designed to prevent unprincipled persons from pauperizing their insane relatives for the purpose of preserving the estates of the latter for the present or future benefit of the former. For the credit of human nature, we are glad to see that the Dr. claims present knowledge of but two such cases in his charge, though he believes there are many more.

Carelessness on the part of authorities who should be vigilant, leads to the imposition upon New York of much pauperism that should be supported elsewhere.

Giving due credit to a kind and faithful few, Dr. Macdonald complains of the low *morale* of the majority of his attendants. Deliberate cruelty, and intoxication, have been overlooked, or the culprit has been allowed to resign, and then been re-appointed. From this charge it is obvious that the physician has not, at the least, full control of his attendants. Nothing but evil, and evil continually, can result to a hospital and its patients from a want of power on the part of the medical management to dismiss and appoint attendants. That good attendants, once secured, should be well fed, allowed time for recreation, and means of enjoyment, is good counsel. The Dr. is afraid, and no wonder, to recommend higher wages, lest he "tempt a class of political hangers-on to take the places" in which to shirk work and draw pay. How significant is this caution!

The condition of the State lunacy laws does not seem to be very happy. In fact it is decidedly muddled. For instance, a patient is placed in a hospital on the required certificate of two physicians, under oath. Now this certificate must be "approved" by a judge or justice before five days pass, else the patient must be discharged. But the judicial officer may "institute inquiry and take proofs as to any alleged lunacy before approving or disapproving of said certificate," and may "in his discretion call a jury in each case to determine the question of lunacy." Now inquiries, taking proof, and especially jury trials, take time and cost money. If his certificate be not approved nor disapproved in five days, what becomes of the patient? Does he go at large on bail, or wholly free, or is he taken from court to the Tombs every evening? The hospital cannot hold him, according to this provision. Taking into account the low character of the mental and moral endowments of the minor judicial officers, we fear it will be easy for impertinent meddlers to deprive a sick man of his best chance of recovery by rendering his hospital commitment practically impossible.

Again, the law concerning certificates has been so tinkered and so involved in obscurity that there is reason to believe that some 150 patients have been illegally committed, and are consequently illegally held, in this asylum!

Moreover, from the peculiar phraseology of one article, the public have

wrongly believed that only a few examiners, appointed by the State, were competent to give certificates, instead of all regular physicians of established residence, good character, and three years of practice. This idea, first derived from a suggested law which did not pass, has been cunningly fostered by a certain clique of medical men who have actually issued circulars conveying the impression that they, and only they, are the proper legal givers of certificates.

Dr. Macdonald complains of the inane and ridiculous attempts made by signers to give their reasons for belief in the insanity of their patients. Scores of these are quoted; and they are literally incredibly inappropriate, impertinent, and absurd. They preach the most powerful sermon we have yet met with upon the need of common sense and general culture as a preliminary qualification to the study of medicine. Anything so illogical, so stupid, and so vulgarly ignorant, as are many of these responses, we could never have imagined as coming from graduates in medicine.

The whole impression made by this report is a sad one. The suffering poor ill cared for, and abused, and subordinated to the avarice and ambition of low politicians; an earnest and humane physician seeing abuses and wrongs which he is not free to set right; popular prejudice standing between the sick and the means of cure; and lamentable folly where good sense might be expected.

B. L. R.

ART. XXVIII.—*Manual of Pathological Anatomy.* By C. HANDFIELD JONES, M. B. Cantab. F.R.S., Physician to and Lecturer on Clinical Medicine at St. Mary's Hospital, etc., and EDWARD H. SIEVEKING, M.D., F.R.C.P., Physician to St. Mary's and the Lock Hospitals, Physician Extraordinary to the Queen, etc. Second edition, revised, enlarged, and edited, by JOSEPH FRANK PAYNE, M.B. Oxon., Assistant Physician to and late Demonstrator of Morbid Anatomy at St. Thomas's Hospital. Crown 8vo., pp. xii., 871. London: J. & A. Churchill, 1875.

THE first edition of this manual appeared in 1854. The absence of any work in the English language, embracing the whole subject, was offered as the incentive and the apology for an attempt to lay before the profession an outline of what was then known in the domain of pathological anatomy. The experience, attainments, and position of the writers were such as amply to attest their fitness for the task, and the able manner in which it was performed may be judged from the kind reception and appreciation which it met with and the position it assumed and has since maintained as a text-book.

Between the first and the second editions, twenty years have elapsed—twenty years of an age distinguished by a desire for positive results, and a thirst for exact knowledge that have stimulated inquiry and original investigation in every department of natural science. During this period, pathology has profited by investigation perhaps more largely, and has thus made more substantial progress than any other department of medical science. By the aid of the microscope, organic chemistry, spectrum analysis, and the most ingenious apparatus and experiments, diligent and skilful observers have so well improved their opportunities for research, that the directions in which their advance is checked only by want of knowledge of physiological conditions are steadily increasing in number. However correctly, therefore, a book might represent the state of pathological anatomy twenty years ago, it would require

many alterations, additions, and omissions, and the most careful revision to make it at the present day as timely and appropriate.

Dr. Payne, to whom the task of editing the second edition has been entrusted, has in the main succeeded in the work of making it conform to the present state of our knowledge of facts, while he wisely refuses, in such a work, to discuss many mooted theoretical points. He has well engrafted the later views, for instance, in the chapter on tubercle and tumours, upon the older text, but is often sadly cramped by it. His reverence for it is so great that he reproduces it to the greatest possible extent. The oft-recurring "of late," "recently," and other similar expressions, are reproduced verbatim from the first edition, when referring to certain pathological discoveries which were recent twenty years ago, but can scarcely be called such at the present time. The style too, while in general smooth and clear, is occasionally marred by slovenly or inexact expressions, as on page 394, where he speaks of phlegmasia dolens, "in which the femoral and iliac *veins* are coagulated." Such a vein would indeed be a pathological phenomenon. Indeed, so difficult is the task of editing an old book on a progressive science that we cannot avoid the conclusion that it is generally better to rewrite it, that is to say, write a new book, and we think this book is no exception to the rule.

The first seven chapters, about one-fourth of the book, are devoted to general pathology, comprising morbid states of the blood, inflammation, textural changes, new formations, tubercle and its allies, and parasites. The tubercular crisis is dropped from the blood disorders, and the subject of tubercle is properly dignified by devoting to its consideration a separate chapter. The following admirable 'summing up' will give a good idea of the clear manner in which this subject is discussed:—

"Tuberculosis is generally, if not always, a secondary disease following some local inflammatory affection; but while several processes, such as induration, suppuration, caseation of inflammatory products, often occur, the conditions under which this secondary affection follows are, at present, unknown; since it is quite certain that all the lesions described as the precursors of general tuberculosis may occur without the development of this disease. The question is equally unsolved whether the infective substance in the tubercle (elaborated within the body or introduced from without) is something *specific*, or whether the effects it is supposed to produce are dependent on mere mechanical irritation and obstruction of vessels."

Although the observations of Chauveau, Klebs, and others upon the production of phthisis in animals by feeding them upon tuberculous matter are referred to, no mention is made of the possibility of the transmission of tubercle by milk which has been demonstrated by the conclusive experiments of Klebs, Gerlach, and Bollinger, in which intestinal and subsequently general tuberculosis was caused in dogs and other animals when fed upon the milk of infected cows, an important practical fact in view of the alarming rate of infant mortality in cities where the children of the poor are generally fed upon swill milk, and in relation to the suckling of children by mothers already the victims of the disease.

In the department of special pathology we miss many important subjects. Thus, no reference is made to the degeneration of the muscular structures of the heart, and the general muscular system in fevers. Laennec insisted upon the occurrence of cardiac softening after essential fevers of the typhus type, and the more recent and careful researches of Hoffman, and Zenker, have demonstrated that it occurs with great uniformity in such cases, not only in the heart but in many other muscles, especially those most frequently used.

The lesions of cerebro-spinal fever deserve more than the passing notice they

receive under the head of simple meningitis, and should certainly appear in the index. The condition of the mucous lining of the stomach in yellow fever considered almost characteristic, by Da Costa and others, seems also to have been neglected, and no mention even is made of the so-called "ovarian cell" asserted by Drysdale and Atlee to be pathognomonic of cystic disease of the ovary.

Thrombosis and embolism with all their varied results are well discussed in a succinct and valuable chapter, though we object to the word "blocks" as an equivalent for the definite term "emboli."

The surgeon will be disappointed in looking for many subjects of interest in surgical pathology. The subject of air in the veins is considered, but no notice is taken of the experiments and observations of Feltz and Robin, which show its danger to lie not in the absence of cardiac stimulation by the air, but in the obstruction to the pulmonary circulation by aerial emboli. Phosphorus necrosis of the jaw is barely alluded to in a line, and no mention is made of the general fatty degeneration of the muscles in phosphorus poisoning. The consideration of abscess occupies but a page, and neither here nor in the chapter on the bones is any mention made of the abscesses which occur in the interior of the bones. Not a word is said as to the repair of bones after fracture, nor is there a line devoted to either the eye or the ear—the eye especially a great omission.

The numerous illustrations are mainly those of the first edition. Some have been added and a few omitted. Very many of those retained could be advantageously spared and give place to others; for instance, in the chapters on inflammation, and necrosis, and illustrating the trichina. Many of those which attempt to depict gross ocular appearances are absolute failures. The "Section of [a] muscular tumour of [the] uterus" (Fig. 23) or the "Drawing of [an] atrophied kidney" (Fig. 160) are scarcely more intelligible than the one on page 521, which might pass for a representation of a piece of anthracite coal, though labelled "Straw-coloured lymph coating an inflamed lung."

The good points and general attractiveness of the work, however, far outweigh these and many other minor objections which could be named. That it will continue to be a favourite text-book, especially in England, we cannot doubt, and it will deserve to be such until some completer work shall appear which will do, on a comprehensive scale, what the excellent little work of Green has done in its more modest though not less useful way.

W. W. K.

ART. XXIX.—*The Goulstonian Lectures on Puerperal Fever. Delivered at the Royal College of Physicians, London.* By ROBERT J. LEE, M.D., F.R.C.P., Assist. Phys. to the Hospital for Sick Children, Great Ormond St., etc. 8vo. pp. 53. London: Smith, Elder & Co., 1875.

IN these three lectures, we have presented a condensed summary of the history, epidemical characters, presumed producing causes, and modes of treatment of this interesting and often fearfully fatal disease, which was well described even as long back as the day of Hippocrates, by whom some characteristic cases were reported, and who also refers to the prevalence of erysipelas at the same time, no doubt believing, as we do at the present day, that the two diseases were intimately associated, but not perhaps understanding the oneness of their pathological characters, especially when of an epidemic and malignant type.

Dr. Lee examines into the views of Harvey, Mauriceau, Cullen, Hulme, Douleat, etc., to show what were the standard opinions of the seventeenth century upon the subjects of poison, miasma, or contagion in the production and transmission of disease. He gives to Dr. Alexander Gordon, of Aberdeen, the credit of having first published to the world the theory of specific contagion in puerperal fever, and contrasts his claims for priority, with those of Denman of England, and Semmelweiss of Germany, to the unquestioned establishment of that of the first-named author, whose views resulted from observations made during an outbreak of the fever in Aberdeen, continuing from 1789 to 1792.

The third lecture is almost entirely devoted to an elucidation of what might be called the *bacterial theory of the conveyance of disease*, i. e., the dependence of the influence generally known as *contagion* upon the existence, in the diseased tissues, of myriads of microscopic organisms known as "bacteria," "micrococci," etc., which it is held by some observers are the media of conveyance of a variety of maladies, each special form having perhaps its own peculiar animalcule or vibron. Practically, this idea is as yet of little value, as the subject still requires a great deal of close investigation to give it general credence. The views of Heiberg, Virchow, Lister, Billroth, and others are of considerable interest to the student of pathology; but there are irreconcilable points as yet, which it would seem must either be explained, or there must be admitted two orders of the same disease, one dependent upon the existence of minute organisms, and the other originating and being developed without any trace of them being discoverable. Prof. Heiberg discovered bacteria in the lacunæ of the nasal mucous membrane; and the reviewer recently accounted for the existence of a large number of cases of puerperal fever in the practice of an accoucheur, by the fact that he was all the time the subject of *ozæna*. Is there any special connection between the diseases as based upon one and the same species of bacteria; or is it that the organic form is simply associated with a disease—conveying purulent discharge?

But seven of the fifty-three pages are devoted to the treatment of this formidable disease; and in these, there is little of any positive value that was not known at the time of Cullen, who recommended hygienic, evacative, and diluent treatment, based upon the idea of septic or putrefactive infection and accumulation. It is true, that, in a general way, an anti-bacterial medication and disinfection, founded upon experiments made under the microscope, is recommended; but no clinical cases are quoted to show the value of such a system, which is still hidden in the mist of theory. Unfortunately, the disinfectants found fatal to the organisms referred to, or capable of preventing their development, cannot be introduced into the human system in quantities sufficient to act as they may be seen to do upon the microscopic slide; and we are obliged to restrict their employment to extraneous infected matters, such as the morbid discharges from the uterus, vagina, bowels, etc. Preventive expedients founded upon the belief in the possibility of the conveyance of puerperal fever, have done much to diminish the frequency of the disease, particularly in such hospitals as the Dublin Rotunda; but curative measures in severe cases are such only in theory in a large proportion of them, and it is now a matter of question, whether the depletory treatment judiciously employed would not be quite as successful as the systems substituted for it. The most severe case to recover, that the reviewer ever saw, was under a venesection of f3lvj.

R. P. H.

ART. XXX.—*Maternal Impressions: A Consideration of the Effect of Mental Disturbance during Pregnancy, upon the Intellectual Development of the Child.* By ROBERT J. LEE, M.A., M.D., F.R.C.P. pp. 15. London: 1875.

AN extract from the preface will explain the design of the author.

“The chief point of interest is the connection between impressions strictly mental, and deficient development of the intellect of the child born under the circumstances referred to. This view is different from that which attempts to connect deformities or marks in children, with the sensible qualities of the object which frightened the mother. It is not surprising that we receive stories of this kind somewhat skeptically. It may be observed that the mental condition of these children is similar to that which is produced in healthy children by actual fright. The general health is usually very good indeed; and though the power of speech is deficient and the intelligence is small, and the passions are easily excited, yet to the impressions of sound, particularly of music, they are extremely sensitive.”

“It would, on reflection, appear to be most natural that maternal impressions should be more frequently followed by some unnatural condition of the intellect of the child, than by abnormalities of growth.” . . . “To confirm our expectation, we find by experience that it is true.” (p. 12.)

The writer states that numerous cases of mental abnormality have come under his notice; that they have almost always been attributed by the mothers to mental disturbance during pregnancy; and that the ratio of cases of intellectual abnormality to those of marked malformation are in his opinion as nine to one.

Although the fœtus in utero has no direct nerve connections with the mother, experience teaches us that mental impressions, especially those produced by anxiety and fear, have a marked influence upon the uterus and its contents. Many sensitive women have been made to abort by causes of a very trifling nature, producing sudden shock. A patient of the reviewer, in very robust health, aborted from the falling of a caterpillar from a tree upon her bare head; and at another time by being told, in the street, that there were several worms upon her dress. She was conscious of an immediate nerve thrill through her system, and a determination towards the uterus ending in labour pain. Passion, we know, is capable of rendering the milk of a woman poisonous to her infant, so as to cause convulsions and death; then why may not the blood, from which the fœtus in utero derives its nutrition, be so changed by the shock of fright, as to be capable of deranging the cerebral development of the said fœtus, as we know the same impression is capable of doing directly, in a young child? There are points of very mysterious interest connected with the whole subject of intra-uterine developments which can never be solved. It would seem that the mother ought to possess a greater influence over the child developed within her, than the father; but unless it be by some nerve shock, the determination of size, form, resemblance, mental vigour, tastes, physical health, etc., appears very nearly equally divided between them. There seems to be a strong connection between likeness and the predisposition to disease, but in some instances the former is just as marked for the sound parent as the latter is for the unhealthy.

Dr. Lee reports four cases of mental deficiency in children born of mothers who had been the subjects of mental disturbance during gestation. One from fright produced by a woman attempting to stab her three months prior to parturition. Another from mental anxiety caused by her husband's illness. A third from fatigue and anxiety in consequence of a sister's insanity. And the

fourth from fright produced by seeing one man stab another in a tavern, four months before parturition.

Other cases noticed were attributed to a thunder-storm; seeing a child run over; violent hæmoptysis in husband; escape from being blown from a railroad bridge, etc. Fright appears by far the most common exciting cause.

R. P. H.

ART. XXXI.—*Sur un nouveau Procédé opératoire de la Cataracte (Extraction à lambeau périphérique)*. Par L. DE WECKER. 4to. pp. 4. Paris, 1875.

DR. WECKER, like all others who have had large experience in the various methods now in vogue for the extraction of cataract, has encountered a considerable number of losses and of partial successes, and commences his paper by an estimate of the percentage of each, in the old flap operation of Daviel, and in the peripheric linear method of Graefe. He estimates the immediate absolute losses by the former method at ten per cent., and places at the same figure the number of those who must submit to a second operation.

The linear operation, by insuring a better coaptation and more rapid cicatrization, gives five per cent. of immediate loss, and five per cent. of cases requiring secondary operations. He rejects all methods by which a linear incision is made in the cornea (Le Brun, Liebreich), on account of the frequency of prolapse of the iris, and the formation of anterior synechia, and proposes to operate as follows:—

1. While the assistant raises the upper lid either by his fingers or a small elevator, the operator fixes the eye with a pair of forceps, seizing it at the middle of the internal border of the cornea, and with a suitable knife (figured in text), detaches accurately the upper third of the cornea from its junction with the sclerotic. A flap is thus formed (on a cornea with a diameter of 12 mm.), with a base of 11.32 mm., and a height of 4 mm. As soon as the counter puncture is made, and it becomes impossible for the iris to fall forward on the cutting edge of the knife, the operator lays aside the forceps, and terminates the section without making any conjunctival flap. The upper lid is then released and the eye closed.

2. The closed eye is covered with a cold sponge, and the patient allowed a short rest. The operator then uses an ordinary cystitome to open the capsule, while with the other hand he himself holds up the upper lid.

3. While the assistant again raises the upper lid, the operator pushes the lens towards the incision by means of the finger on the lower lid, and at the same time with a thin rubber spatula depresses the upper lip of the wound, and the "peripheral insertion" of the iris, so as to disengage the lens, which at the moment of exit is apt to be covered by the iris.

4. The pupil is cleared of all cortical masses by pressure on the cornea from below upwards with the finger, protected by the lower lid, and until it is perfectly clear, no attention is paid to any prolapse of the iris, which, if it does not retract of itself, is gently replaced in the anterior chamber by means of the spatula.

5. When the prolapse has been replaced in the anterior chamber, two to three drops of a neutral ($\frac{1}{2}$ per cent.) solution of the sulphate of eserine is dropped into the conjunctival sac, and a pause is made of five minutes to allow the myotic action of the drug to manifest itself. Then if no prolapse is

visible when the patient looks down, a compressive bandage is applied, which is removed two hours subsequently, to allow a second application of the sulphate of eserine. A considerable myosis is thus obtained, which lasts longer than the twenty-four hours usually required for closure of the wound. Wecker states that no irritation is caused by a fresh neutral solution of sulphate of eserine, but gives no statistics of the results obtained by this method.

W. F. N.

ART. XXXII.—*Clinique Ophthalmologique du Dr. de Wecker.* Par Dr. MASSELOU, Chef du Clinique. 8vo. pp. 32. Paris, 1874.

THESE statistics of operations at the clinic of Dr. Wecker show a total of 670 operations for the year 1874, and the writer considers it necessary to apologize for their limited number by stating that during five months Dr. Wecker was absent from his clinic on account of sickness. Of this series 204 were operations for cataract, and of these 179 were senile cataract, operated by the periphtric linear method. Of the latter eleven (6 per cent.) have been lost sight of, so that there remain 168 to be accounted for. Of this number (viz., 168), 156, or 92.85 per cent., recovered with vision, varying from $\frac{1}{10}$ — $\frac{1}{10}$; 3 (or 1.19 per cent.) lost their eyes from suppuration of the cornea, and 9 (5.35 per cent.) had closure of the pupil.

Among 135 iridectomies, we find 39 for optical and 96 for antiphlogistic purposes. Of the latter only 1 for acute glaucoma, 31 for glaucoma simplex, 6 for chronic inflammatory glaucoma, and 24 for irido-keratitis. We find 16 iridotomies, of which 2 were for congenital luxation of the lens, and 1 for zonular cataract.

In one of the former the slit in the iris was made inwards and downwards (the luxation being upwards and outwards), with great success. Before the operation there was a myopia $\frac{1}{32}$, with an acuity of vision $\frac{1}{4}$. After obtaining a clear pupil below the lens with $+\frac{1}{24}$, V in right eye was $\frac{1}{2}$, and in left eye $\frac{1}{3}$.

The writer quotes Mooren and Rothmund, in commendation of this operation (iridotomy), lately revised and systematized by Wecker, the former specially lauding it in cases of secondary cataract.

A case of advancement of the internal rectus after its complete detachment by a blow from a pump handle, is recounted at length, with a new instrument for seizing the muscle, a sort of brise-pierre hook. A successful case of keratoconus is given where the apex of the cone was cut off, and the resulting ulcer, after cauterizations with nitrate of silver, was slit up in the method introduced by Sæmisch for serpiginous corneal ulcers. A year later the cornea had flattened, with a small leucoma, and vision was improved. The report advocates the slitting of detached retina with needles, although admitting the frequent futility of the attempt, and gives an unsuccessful case where there was a large detachment of long standing, with numerous vitreous opacities. Apropos of retinal detachments, Dr. Masselon dilates on the proper method of taking the field of vision, and on account of its rapidity, advocates taking the field on a blackboard, and converting the result by calculation into corresponding field as given by a perimeter. The method used is that previously given by Dor, in the *Archiv für Ophthalmologie*, xix. 3, p. 319. No reference is made to the curved blackboard introduced for the purpose by Scherk, which allows the

field to be taken with the same accuracy as the perimeter, and with the same rapidity as a blackboard or other campimeter.

The subject of dermic and conjunctival grafts is discussed, and the author, although admitting that the method is confessedly unsuccessful in general surgery, maintains that, owing to the usually smaller amount of surface to be covered, it may still be of use in eye surgery. He thinks that amputated limbs should furnish most of the material, and relates, as proving the practicability of obtaining live integument by purchase, that he has recently seen sales of it among the patients at the clinic at the rate of ten francs the square centimetre.

Dr. Masselon claims that the transplantation of the conjunctiva of the rabbit has been twice successful at Wecker's clinic, with a view of enlarging a socket sufficiently to allow the use of an artificial eye, and believes that in spite of the ultimate disappearance of the animal tissue there cannot be the slightest doubt that such grafts are successful in preventing the reunion of the lids with the ball, or with the stump left by injury or operation.

He concludes his report by quoting the cases reported by Illing of Vienna, who used for his grafts, in one instance, mucous membrane from the mouth, and in another, mucous membrane from the vagina. Although so successful in inducing his patients to part with portions of their skin for the benefit of others, he thinks the proposal of Becker to induce patients with blind eyes to part with a portion of their conjunctiva will necessarily be unsuccessful, and believes that experience will determine whether it is best, in order to obtain grafts, to have recourse to the conjunctiva of animals, to other mucous surfaces, or to conjunctiva from other individuals.

W. F. N.

ART. XXXIII.—*Cyclopædia of the Practice of Medicine*. Edited by Dr. H. VON ZIEMSEN, Professor of Clinical Medicine in Munich, Bavaria. Vol. III. *Chronic Infectious Diseases*. By Prof. CHRISTIAN BAUMLER, of Erlangen; Prof. ARNOLD HELLER, of Kiel; and Prof. OTTO BOLLINGER, of Munich. Translated by ARTHUR H. NICHOLS, M.D., of Boston; WILLIAM ASHBRIDGE, M.D., of Philadelphia; JAMES G. HYNDMAN, M.D., of Cincinnati; and EDWARD B. BRONSON, M.D., and EDWARD L. KEYES, M.D., of New York. ALBERT H. BUCK, M.D., of New York, Editor of American edition. 8vo. pp. xii., 672. New York: William Wood & Co., 1875.

THE third volume of this admirable series contains articles on the chronic infectious diseases. Under this head Dr. Ziemssen includes—1, syphilis; 2, infection by animal poisons, viz., glanders, anthrax, hydrophobia, the foot and mouth disease, and infection by the bite or sting of poisonous animals; 3, diseases from migratory parasites, such as the *Echinococcus*, the *Cysticercus cellulosæ*, and the *Trichina*. The subject of syphilis has been committed to Prof. Baumler, who has left nothing to be desired in the manner in which he has done his work. We are acquainted with no other treatise in which the student will find contained, in a comparatively small space, as much useful information in regard to all that relates to this disease. He regards syphilis as “a chronic, infectious disease, whose course, though protracted, is not, on this account, less typical than that of other infectious diseases.” “But in this disease,” he adds, “the different stages lie so far removed from each other that the connection between their symptoms is not at once manifest.” This is precisely the same view as Mr. Hutchinson has taken in his

article in *Reynolds' System of Medicine*; and, indeed, there is much in it that is both attractive and convenient. Thus syphilis, like the acute infectious diseases, has a period of incubation, which is followed by a stage bearing considerable resemblance to the eruptive stage in the latter class of diseases, while the sequelæ of these may be regarded as the analogues of the lesions of the tertiary stage of the former.

In regard to the asserted introduction of syphilis into Europe from this country by Columbus's sailors, Prof. Baumler brings very strong evidence in favour of the theory that the disease existed in certain portions of Europe—more especially in the southern part—prior to the epidemic outbreak of the disease in Italy at the end of the fifteenth century, in the same way, perhaps, as it yet prevails in certain retired localities in the form of an endemic disease. Various circumstances at that time combined to favour this outbreak. Among these may be mentioned the peculiar pilgrimages and the crusades of the previous century, which had had the effect of establishing more intimate relations between the different nations. Wars, too, had been frequent, and these, with the causes above named, had tended to deprave the morals of the people and to give occasion to all kinds of licentiousness.

The author devotes considerable space to a discussion of the subject of the unity or duality of the syphilitic poison, summing up his conclusions in the following paragraph:—

“Hence we accept only one syphilitic poison, but in another sense from that given to it in the doctrine of unity. We do not regard the contagious principle of chancre (chancroid) as identical with this poison. It is a pathological agent by itself, but a far less constant and uniform one than the poison of syphilis; since we have seen that it may be generated *de novo* under the co-operation of certain influences, and quite independently of syphilis.”

The experiments which show that this chancroid poison may be generated *de novo*, are, we think, of sufficient interest and novelty to be briefly recounted here, proving, as they do, that the chancroid is of less specific nature than has been hitherto generally supposed; and that perfectly ordinary, non-specific pus, inoculated upon syphilitic subjects, causes soft ulcers which may also be inoculated in generations. Thus, at Zeissl's suggestion, Pick inoculated pus from scabies, pemphigus, and acne pustules (which pus, when inoculated upon the bearers of these affections, or other non-syphilitic persons, gave a negative result) upon syphilitic subjects, with the result of producing soft sores, from which still other inoculations could be made. These experiments were successfully repeated by Kraus and Reder, and by Henry Lee. Therefore it would appear that the skin of syphilitic individuals possesses a marked vulnerability, a peculiar aptitude to become inflamed when acted upon by irritants. Indeed, Kaposi goes still further, having recently published the results of some investigations which completely divest the soft chancre of its specific character. These, it is true, still need confirmation; but should their correctness be established by other observers, as Prof. Baumler says, “the doctrine of the identity of the syphilitic and chancre poisons, or even of a relationship between them, will lose its principal support.” Kaposi's experiments have taught him, he says, “that non-syphilitic pus, such as we find in acne and scabies pustules in non-syphilitic persons, when inoculated upon the bearer, as well as upon other non-syphilitic persons, produces pustules whose pus proves to be inoculable in generations; that loss of substance was caused by the pustules, which healed by cicatrization, and that with the increase in the number of the pustules produced by the inoculation the contagiousness of the pus diminished, and finally became quite extinguished.” The chancroid is therefore, in Prof.

Baumler's opinion, a thing by itself, so that "when only a simple chancre is produced by the inoculation of a healthy person with pus from a chancreoid, there is no danger afterwards of transmitting syphilis in any further inoculations which may be made from this simple chancre; for there has never yet been a single instance where syphilis was caused by the inoculation of chancre-pus from an individual who had only chancre, and not syphilis." He admits, however, that both poisons may be conveyed from one individual to another at the same time, and that this may very readily be done if a true chancre has been excited to free suppuration by the application of an irritant ointment—as, for instance, savine ointment—or if, in experimental inoculation, the blood of a syphilitic individual be mixed with such pus.

Another point of interest to which Prof. Baumler also alludes is the fact that in some instances the inoculation of syphilitic secretions upon a syphilitic subject has been followed by the development of an indurated papule, after the lapse of a considerable period of incubation (from three to four weeks). But in all the cases, with a single exception, in which a second inoculation produced its usual effect after the syphilitic primary affection had already been developed, this inoculation, he says, was made before the disease had progressed so far as to involve the whole organism. There are other cases on record, to which he also refers, where, after experimental inoculations of the syphilitic poison upon healthy subjects, the usual local symptoms appeared after a considerable period of incubation, and yet were not followed by symptoms of general infection.

When speaking of the prophylaxis of the disease, Prof. Baumler says that all attempts to limit the spread of the disease must fail, unless these include some sort of supervision of prostitution, since the experience of thousands of years has shown this to be an unavoidable evil, the suppression of which is impossible. In support of this position he adduces the improvement in the health of the troops in garrison towns of England and Belgium that has followed the supervision and examination of the notorious prostitutes of the place. This subject has, however, many sides, and any attempt to discuss it would carry us far beyond the limits of a bibliographical notice.

The author speaks with no uncertain sound in favour of the treatment of constitutional syphilis by mercury. "If," he says, "induration is developed in a suspicious erosion, particularly in one on the female genitals, or in an ulcer which began as a chancreoid, and if the lymphatic glands of the part show a slowly increasing enlargement, the administration of mercury must not be delayed." But nothing beyond the slightest grade of mercurial stomatitis should be allowed to arise. After the remedy has been given for some time, he advises that it should be discontinued for two or three weeks, and then again employed. Recourse should be had to inunction whenever the state of the digestive apparatus forbids the internal administration of mercury; and also whenever it is desirable to obtain the action of mercury as speedily as possible; for instance, when the destruction of important organs, such as the eye, the brain, or the larynx, is threatened by the disease. Its tendency to cause an eczematous eruption in persons with delicate skins should, however, not be forgotten. He apparently prefers the bichloride to the other preparations of mercury for internal administration, but speaks favourably of blue mass, mercury with chalk, and of the protiodide. In the treatment of the symptoms of the tertiary stage it is scarcely necessary to say he has recourse to the iodide of potassium.

We have thus briefly brought to the notice of our readers a few points which have specially attracted our attention in a careful reading of Prof. Baumler's

article, and regret that the space and time at our command do not permit us to do this as fully as the importance of the subject deserves. The translators have, as in the preceding volumes, rendered the German of the original into good English. A little more care might, it is true, have been taken in the use of the words chancre and chancroid; and we can scarcely regard the expression on page 142, "This is not to be surprised at," as a very elegant one, even if we admit that it is good English, which we are not disposed to do.

The article on "Infection of Animal Poisons" is written by Prof. Otto Bollinger, of Munich; and that on "Diseases from Migratory Parasites," by Prof. Arnold Heller, of the University of Kiel. The names of these gentlemen are a sufficient guarantee of the excellence of their papers, which unfortunately we cannot, at present, more fully notice.

J. H. H.

ART. XXXIV.—*Clinical Lectures and Essays.* By Sir JAMES PAGET, Bart., F.R.S., D.C.L. Oxon, LL.D. Cantab., Sergeant-Surgeon Extraordinary to Her Majesty the Queen, Surgeon to H. R. H. the Prince of Wales, Consulting Surgeon to St. Bartholomew's Hospital. Edited by HOWARD MARSH, F.R.C.S., Assistant-Surgeon to St. Bartholomew's Hospital and to the Hospital for Sick Children. 8vo. pp. x., 428. New York: D. Appleton & Co., 1875.

THIS charming volume (for charming it is, both in matter and manner) consists almost entirely of various lectures and short papers reprinted from the pages of the journals and other medical periodicals in which they were first published, with occasional additions by the distinguished author, and with a score or so of notes (of which the chief are collected together in an appendix) by the able editor. Most of these papers were more or less fully noticed in this Journal at the time of their appearance, and it will not therefore be now necessary for us to enter into any detailed examination of their merits; we shall accordingly limit ourselves to a recapitulation of their titles, with a brief reference to certain points which seem to call for special attention.

The volume opens with three clinical lectures on the various Risks of Operations, appropriately followed by one on the Calamities of Surgery. Then come in succession a short paper on Stammering with other organs than those of Speech; a lecture on Cases that Bone-setters cure; four on Strangulated Hernia; a paper on Chronic Pyæmia; six lectures on Nervous Mimicry of Disease (Neuromimesis); one on the Treatment of Carbuncle; one on Sexual Hypochondriasis; papers on Gouty Phlebitis and Residual Abscess; a lecture (founded on personal experience) on Dissection-Poisons; a paper on Quiet Necrosis; one on Senile Scrofula; a lecture, or rather part of one, on Scarlet Fever after Operations; and Notes for the Study of some Constitutional Diseases. The volume terminates with an appendix of Mr. Marsh's notes, and an elaborate index.

Of these papers, all, we believe, except the last, and that on Sexual Hypochondriasis, have been already published, but every one will be found worthy of reperusal. The notes for the Study of Constitutional Diseases, though furnishing much food for thought, and amply reflecting the character of their writer as a student of philosophical surgery, will, we believe, not be as widely appreciated as the other papers in the volume, for the reason that (as hinted by the author himself in his introductory remarks) they deal with questions upon

which the experience of surgeons in general does not enable them to form an opinion. Perhaps the most valuable portion of the whole book is that which treats of the nervous mimicry of diseases; a subject which since Brodie wrote upon "hysterical joints" has always interested surgeons, but which has, so far as we know, never been so thoroughly and satisfactorily dealt with as in these lectures. Upon what are often, though with questionable propriety, called more practical subjects—for what can be more truly practical than the means of distinguishing organic from mimicked disease?—the reader may consult with advantage the papers on strangulated hernia and on carbuncle. We take this opportunity of reiterating the expression of our conviction that the so-called "do nothing" treatment recommended by the author in cases of the latter affection is the proper treatment: we know of no disease the victims of which have suffered and still suffer more from meddlesome surgery than those afflicted with carbuncle.

In his preface Sir James Paget apologizes for "the apparent disregard" in his book "of the works of others:" we beg leave to say that no apology in the matter is necessary; those who want to know the views of surgeons in general, or to ascertain what has been written in various parts of the world upon any particular subject, will naturally have recourse to systematic treatises and monographs, and if they do not find there what they need, will have a right to be disappointed; but no one, we feel confident, will take up Sir James Paget's volume with any desire other than to find out what are its distinguished author's individual opinions, and no one, we feel equally sure, will lay the book down without a feeling of gratitude to the writer for his numerous and admirable contributions to the science and art of surgery.

Of Mr. Marsh's notes we have only to say, and we think it high commendation, that they are not unworthy of the text to which they are appended.

Though the volume bears an American imprint, it is all English except the binding, the catalogue inserted at the end, and the title page; had the publishers selected for the latter a paper more nearly resembling in tint that upon which the work itself is printed, they would have better consulted the æsthetic taste of their customers.

J. A., JR.

ART. XXXV.—*The Successful Treatment of Internal Aneurism by Consolidation of the Contents of the Sac. Illustrated by Cases in Hospital and Private Practice.* By JOLIFFE TUFNELL, F.R.C.S.I., M.R.I.A., President of the Royal College of Surgeons of Ireland; Ex-Regius Professor of Military Surgery, etc. Second Edition. 8vo. pp. 71. London: J. & A. Churchill, 1875.

THE first edition of Mr. Tufnell's pamphlet was published in 1864, and was the subject of a full notice, from the skilful pen of Dr. W. F. Atlee, in the number of this Journal for April, 1865. The number of cases upon which the author's remarks are based, has been increased from five to eleven (including one case of popliteal aneurism), and Mr. Tufnell has taken advantage of the call for a second edition, to incorporate in his work such additional hints for treatment as have been furnished by his prolonged experience. Mr. Tufnell's method is, as our readers doubtless know, a modification of that employed by Valsalva, consisting essentially in the enforcement of absolute rest in the recumbent posture, in regulation and limitation of the diet, and in the administration of anodynes, with laxatives and tonics in cases requiring their use.

Mr. Tufnell has adduced enough evidence in favour of his mode of treatment to fully warrant him in giving it the name of "successful;" not, as he very

justly points out, that by his plan recovery can be insured in every case of internal aneurism, but that his method has proved, and, if properly carried out, will prove successful in cases which would otherwise be hopeless. Moreover, Mr. Tufnell's plan has the great advantage that even when it does no good, it at least does no harm—a merit which unfortunately cannot be attributed to the “rapid pressure treatment” (which is, besides, manifestly inapplicable to cases of thoracic aneurism), and still less to the galvano-puncture, iron wire, and horse-hair methods with which some surgeons have experimented of late years.

It is not very much to the credit of our profession, that the success obtainable by Mr. Tufnell's mode of treatment has been so long known without having more forcibly influenced the practice ordinarily adopted; had Mr. T. gained half as good results by the introduction of some new, difficult, and dangerous operation, we venture to say that his example would have found more imitators.

The three plates which accompany Mr. Tufnell's pamphlet are beautiful specimens of the chromo-lithographic art. J. A., JR.

ART. XXXVI.—*Ricerche Intorno Alla Bilharzia Hæmatobia in Relazione colla Ematuria Endemica dell' Egitto; e nota intorno ad un Nematodeo trovato nel sangue umano.*

A Research concerning the “Bilharzia Hæmatobia” in relation to the Endemic Hæmaturia of Egypt; and an account of Nematoda (filliform entozoon) found in Human Blood. By Dr. PROSPERO SONSINO. Cairo, April 20th, 1874. 4to. pp. 13.

THIS contribution to helminthology is based upon an examination of ten cases of the “special endemic hæmaturia of Cairo” observed by the author, and due to the presence of the *distoma hæmatobia*, better known, perhaps, by the name of *Bilharzia hæmatobia*, from its discoverer, Dr. Bilharz, Professor of the School of Medicine of Kasr-el-Aeni, who described it in 1851. Reyer, of the same school, proved its coexistence with calculus; and Henry Meckel found a central nucleus in a stone, which consisted of a collection of the eggs of the entozoon.

The disease is a very common one in Egypt, and probably exists more or less throughout Africa, as it has been found at the Cape of Good Hope; it has also been discovered in the monkey. Dr. Bilharz thought that half the adults of Egypt were affected by it. The natural habitat of the worm is in the blood-vessels, but the ova and embryo may be found by examination of the urine.

The disease appears thus far to be beyond remedy, except such as may be palliative. A parasiticial treatment would theoretically appear to be the correct method, but cannot be carried out in practice, except where the entozoa are found in the alimentary canal, or at the surface of the body. The paper of Dr. Sonsino throws no new light upon this important point. He gives some rude microscopical drawings of the ova found in the urine, and a sketch of two *nematoda*, which he claims to belong to a new species, that he found in the blood of one of his ten patients, a boy of fifteen. Six of his subjects were boys of 12 to 15 years of age; three from 16 to 19; and only one an adult, who was 35.

The origin of this fatal malady is believed to be dietetic; but what order of food, is unknown. It has been attributed to the water of the Nile, to its fish and molluscs, and even to bread, grain, and fruit; but these views are simply

conjectural. The *Nematoda* are so large a class, and with such slight shades of difference, that we cannot tell, from the author's description, whether his is a new variety or not. In view of the fact that there are from five hundred to eight hundred varieties, many of them with scarcely a shade of difference, the discovery of a new one is of very little moment. What is wanted is the discovery of the sources of human entozoa, that their entrance into the system may be prevented.

R. P. H.

ART. XXXVII.—*A Series of American Clinical Lectures.* Edited by E. C. SEGUIN, M.D. Vol. I. No. ii. *Acute Rheumatism in Infancy and Childhood.* By A. JACOBI, M.D., Professor of Diseases of Children in the College of Physicians and Surgeons, New York. Pamphlet, pp. 38. New York: G. P. Putnam's Sons, 1875.

DR. JACOBI's lecture on "Acute Rheumatism in Infancy and Childhood" fully sustains the enviable reputation he has won for himself as a careful and accomplished writer on the Diseases of Children. Taking three interesting cases as the basis of his remarks, he first gives us his views of the nature of rheumatism, and then passes on to speak of the symptoms of the disease in early life, and of the points of difference between these and those presented by adults. He concludes his lecture after properly considering the subjects of diagnosis and prognosis, by a discussion of the questions involved in treatment. Neither the theory which makes the disease dependent upon the circulation in the blood of some foreign material, such as lithic acid or lactic acid, nor that which classes it among the pure neuroses, and which was, we believe, originally proposed by the late Dr. J. K. Mitchell, of Philadelphia, has yet been proven, and Dr. Jacobi finding them both unsatisfactory, thinks "it is much more rational to assume that some changes in the bloodvessels must coëxist with the multiple fluxions which constitute the fundamental phenomena of the disease," adding that in rheumatism "the cause of the various effusions would lie, no matter what its original source will be found to be, on the whole surface of the intima of the bloodvessels from the endocardium to the smallest artery or vein, even the vasa-vasorum. Endocarditis, then, would not be the complication of rheumatism, but its highest and most developed expression."

Rheumatism in children presents in Dr. Jacobi's opinion several peculiarities, the most important of which are the following: Swelling of the joints less marked and less permanent; pain not so excessive; redness less intense; temperature not so high, and in some cases not at all raised; no greater liability of males than females to the disease, and greater tendency than in adults to serous as distinguished from fibrinous effusions. Delirium is more common in adults, convulsions in children. Unless there is endocarditis, respiration is in proportion to the fever; perspiration is not copious, urine scanty, and not loaded with uric acid; on the contrary, he says, it is frequently copious and pale. The course of the disease is, perhaps, less regular than in adults. His experience has also led him to the conclusion that the disease is not so rare in children as is generally supposed, and that heart troubles are exceedingly frequent. In fact, Dr. Jacobi looks upon the absence of this complication as exceptional; in this agreeing with Picot and Claisse, who found it in 37 cases out of 47, and in 14 out of 18, respectively. He ascribes this greater prevalence of heart disease in the very young to the greater physiological activity of the organ, which of course renders it more liable to become the seat of pathological changes. Notwithstanding this fact the disease ends fatally less frequently in children than in adults.

While admitting with Dr. Kirkes that chorea occurring during or after an attack of rheumatism is generally caused by cerebral embolism, the author, nevertheless, finds the theory inadequate to explain its occurrence in those cases in which it is the earliest manifestation of rheumatism, appearing before the swelling of the joints, or even before the signs denoting endocardial inflammation. In these cases, he believes that there must be some lesion either in the organ of the will, or the centre of co-ordination, or some other parts of the nervous centre, but in view of the readiness with which the symptoms disappear in the majority of instances, he says the anatomical change cannot be great. It is probably an alteration in the nutrition of the parts. In some cases it would seem to be hyperæmia or inflammation of the spinal meninges.

The diseases most likely to be mistaken for rheumatism are affections of the bones involving the joints, and various neuralgias; but the exercise of a little care will generally enable us to make a correct diagnosis. The treatment which Dr. Jacobi recommends is simple. The joint should be placed in an easy position, and, this having been done, its vascularity should be reduced either by local depletion, or, by what is far better in the author's opinion, the application of ice. Later he advises the use of poultices, warm water, blisters, and pressure, in the order named. Of internal remedies he relies most on veratrum to relieve vascular pressure and to reduce the frequency of the pulse, and on quinia as an antiphlogistic. To be at all efficacious the latter remedy should, in his opinion, be given in a dose of five grains, once, twice, or three times daily, to a child of one or two years, since he has found that quinia is tolerated and required by the young in apparently disproportionate doses. He prescribes iodide of potassium not merely as a diuretic, but also in consequence of the power which he believes it possesses of restraining the transformation of cells into connective tissue. He apparently attaches very little importance to the administration of the alkalies.

In the management of those cases of acute chorea depending upon meningeal or medullary congestion or inflammation, he prefers ergot. This should be given in large doses, half a drachm of the fluid extract, repeated three or four times daily. Given in less quantity than this it will generally fail to do any good. Its use may be persevered in for many weeks in succession, and has never to the author's knowledge given rise to any bad results.

In conclusion, it gives us great pleasure to put on record the gratification and instruction we have derived from reading this lecture. J. H. H.

ART. XXXVIII.—*A Series of American Clinical Lectures.* Edited by E. C. SEGUIN, M.D. Vol. I. No. vi. *Otitis.* By C. R. AGNEW, M.D., Clinical Professor of Diseases of the Eye and Ear in the College of Physicians and Surgeons, New York. 8vo. pp. 22. New York: G. P. Putnam's Sons, 1875.

THIS is one of the series of American Clinical Lectures edited by Dr. Seguin, and is addressed, not to aurists, but to medical students and general practitioners.

No one whose special practice brings before him the results of the frequent mismanagement of this very common disease, will deny that the subject of this little pamphlet has been well chosen, and that it has a useful mission to perform. The author dwells upon the fact that a large proportion of cases arise from "taking cold," and the first pages of the lecture are devoted to detailed instructions how to avoid this cause by attention to clothing, food, exercise, and habits of life.

In the directions for treatment, free incisions of the meatus in furuncular inflammation, and early and frequently-repeated paracentesis in otitis media are strongly recommended. On the latter point the author goes beyond most authorities, and, it seems to us, rather underrates the difficulty of the operation when he states that any one who "can pass a key into a night-latch can incise a drum-head." We know a good many people who find no difficulty, with perhaps occasional exceptions, in passing a key into a night-latch, whom we would rather not trust to puncture our ear-drum. "Paracentesis every day or every other day for a week or more" is very painful, if not rather heroic, treatment, and we have never met with a case in which it seemed to us to be necessary.

The treatment of acute inflammation of the tympanum is summed up as follows: "Leeches, warm fomentations, paracentesis, Politzer's inflator, anodynes." The omission of any mention of the warm-water douche or frequent gentle syringing with warm water, so useful and safe, and so universally recommended, is probably accidental.

When, in cases of otitis media, there is an extension of the inflammation to the skin and periosteum of the external meatus, shown by a tender swelling, the importance of making a free incision is urged. "This early cutting will give great relief from pain, and perhaps prevent the formation of a carious fistula through the bony wall of the canal into a neighbouring mastoid cell."

The "busy practitioner" will find in this pamphlet much valuable information pleasantly conveyed, and a useful guide in the treatment of a class of cases that he is sure to meet with not only once but often.

G. C. H.

ART. XXXIX.—*Résumé of a Report on Position, Pneumatic Pressure, and Mechanical Appliance in Uterine Displacement, read before the Georgia Medical Association of Savannah, April 23, 1875.* By HENRY FRASER CAMPBELL, A.M., M.D. 8vo. pp. 18. Atlanta, 1875.

THE writer proposes to make the patient replace her uterus at night before retiring, by causing the bowels to gravitate towards the diaphragm, and then aiding the suction thus produced, by admitting air into the vagina by means of a small glass tube furnished her for introduction when in the "genu-pectoral position," which he thus describes, viz.:—

"Let the patient loosen all strings and fastenings of the dress and corsets, and place herself on the bed on her knees, bending the body forward, till the head and thorax are brought down to the same plane as that on which the knees are resting, viz., the surface of the bed. The face may be turned to one side, resting on the two hands, while the elbows are thrown out widely from the sides. The knees are to be separated from five to ten inches. The thighs must be perpendicular to the surface of the bed." (p. 4.)

"All that is necessary for self-replacement is the introduction of the *repositor* for a moment or two." (p. 6.)

The "Pneumatic Self-Repositor" is described, and shown by a wood-cut, as a glass tube of various forms, from two and a half to three inches long, slightly curved near the end, and bulbous, to admit of easy introduction.

Nightly self-replacement is recommended not only in the ordinary uterine displacements, but to relieve pregnant women in their early stage, from the sense of weight, downward pressure, etc. etc., arising from uterine gravitation.

He also recommends inflating the rectum, as with a colpeurynter, in certain cases of retroversion, to dislodge the fundus from the hollow of the sacrum,

and then completing the replacement by the admission of air into the vagina as before described.

The paper is illustrated by several wood-cuts showing the position of the woman, and the internal changes produced by the action of gravitation and suction.

R. P. H.

ART. XL.—*The Physiological Reasons Why.* By ALEXANDER HUTCHINS, A.M., M.D. 8vo. pp. 50. Brooklyn, New York, 1875.

THIS closely but elegantly printed pamphlet is a reprint, from the Brooklyn Journal of Education, of an essay to which a prize offered by the New York State Medical Society was awarded. Its subject, not very obvious from its principal title, is school hygiene with reference to the Physiological Relations of Age and Sex to Mental and Physical Education. It is a somewhat peculiar production. One moment we come to some long and difficult passage where we seem to get shadowy glimpses of ideas through the fog of words, and are harassed by unpleasant doubts whether we are stupid or our author unusually profound. Then on the same page the chances are that we encounter crisp sentences that carry home their meaning with a crack like a rifle, and with an aim as true.

The essay is divided into three parts. The first treats of "The Problem," which seems to be the development or education of the growing mind and body. This can be properly solved only by much greater intelligence and thoughtfulness in parents. The latter are really responsible for the excesses and bad methods of the schooling. To be rid of the children many hours and to have them taught from many books are too generally their only care. Physical growth and health are not thought of. The State cannot afford to instruct the minds of its children at the expense of their bodies. Uniform and rounded development, not partial and one-sided culture, makes profitable citizens. But as "laws follow, and do not anticipate public opinion," the State cannot as yet prescribe rules for protecting and securing physical development.

The true end, even of mental training, is mistaken by parents. Discipline, the power to use the mind, should be the aim; but parents wish their children crammed with facts.

Part second deals with "The Material," opening with a somewhat abstruse exhibition of the character of sexual difference, which is fully recognized and appreciated. The exposition of likeness and unlikeness is extremely forcible and closely reasoned. Unlike Dr. Clarke's argument, however, it is addressed rather to the philosopher and the scientist, than to the popular understanding. That there is agreement in the conclusions of the two writers may be seen by the following sentence of Dr. Hutchins: "Woman, therefore, is a law unto herself, and the conditions of her best physical and psychical development are imposed by the laws of her organization."

The latter portion of this division of the essay notes the fact that the "material," both male and female, is, during the school years, undergoing the natural growth or development from childhood towards adult age. This condition limits and prescribes the amount and kind of education which can be safely attempted.

Part third treats of "The Process." The duty of the physiologist and the student of social science is to point out the mistakes of modern educational methods and urge upon parents and teachers their correction. All influences of school work, objective or subjective, which interfere with a healthful, co-ordinated growth of body and mind, are to be exposed and removed. The author

goes on to apply his principles to school-life under the following aspects. Apportionment of time, as to age of pupils and hours of confinement: character of the application, as to amount and kind of work, and the rest and physical exercise to be mingled with it: the dependence of school on home hygiene, showing the duty of parents to send their children to school well and not ill, and to closely watch over their physical health: identical and co-education, as to which, like Dr. Clarke, he condemns only the latter: the purposes of the higher education defined by structure; the ends and aims sought to be achieved will be modified by the sex of the student.

This latter division of the essay is, as might be anticipated, more practical in its tendency, and should perhaps be excepted from our former intimation that the paper was not adapted to popular reading.

Of the brilliant and vigorous utterances of condensed thought which so agreeably relieve the occasional passages of obscurity or stilted diction, we had marked some dozen or two for quotation, but must refrain and be content with commending the work to our readers.

B. L. R.

ART. XLI.—*Clinical Studies with Large Non-emetic Doses of Ipecacuanha.*

By ALFRED A. WOODHULL, M.D., Assistant Surg. U. S. A. 8vo. pp. 63
Atlanta, 1875.

Clinical Studies with the Non-nauseating Use of Ipecacuanha, chiefly in Inter-mittent Fever. By ALFRED A. WOODHULL, M.D. 8vo. pp. 23. Atlanta, 1875.

IN the first of these pamphlets, Dr. Woodhull relates twenty-four cases of dysentery beneficially treated by non-emetic doses of ipecacuanha, thus confirming the favourable reports made years ago by the British army surgeons in India, and also the experience of many practitioners in this country who have adopted this mode of treatment.

Dr. Woodhull's analysis of the cases he has reported demonstrates two facts—first, as to the promptness with which the ordinary sporadic dysentery yields to large doses of ipecacuanha; and, secondly, that in 20 and 30 grain doses it is not necessarily followed by emesis.

"There are two methods of administration," Dr. W. states: "On an empty stomach give from fifteen to twenty-five minims of the tincture of opium in a small quantity of water; fifteen or twenty minutes later apply a counter-irritant to the epigastrium, and at the same time give the powdered ipecacuanha in as little water as possible. With care a little more than two fluidrachms of water will make thirty grains of ipecacuanha into a paste sufficiently liquid to be swallowed. Or, for those who take pills easily, that form may be employed. In such cases the opium, in the proportion of one grain to twenty, may be incorporated in the pill. Twenty-five grains of ipecacuanha can be put up into two boluses, or twenty-five grains of that drug and one of opium will make up in four pills. Laudanum might be used in the pill form of ipecacuanha, one advantage of which is that the local effect of the opiate is not dissipated before the other drug begins to be absorbed. Recumbent rest must be strictly maintained, and no food nor drink be taken for at least four hours and usually longer. The dose may be repeated in from two to six hours, or, should the first be rejected, the second may be given as soon as the stomach is settled. In India sixty and more grains at one dose have been retained. I incline to think that, where the stomach is empty, the medicine acts non-emetically in direct proportion to the severity of the attack."

Dr. Woodhull quotes many authorities in reference to this mode of treatment and to the therapeutic properties of ipecacuanha, and indulges in some hypotheses which we do not propose now to discuss.

In his second pamphlet Dr. Woodhull relates twenty-three cases of intermittent fever, all but one of which were successfully treated by ipecacuanha "given in varying quantities from one grain to twenty." His impression is that one or two grains every three or four hours is the best method for ordinary chills. "Large doses did not," he says, "appear to exert a beneficial effect in proportion to their size. If large doses are used, it is well to guard them with small quantities of opium, and to observe the precautions of recumbent rest and abstinence. In one-grain doses abstinence from fluid is usually all that is necessary."

ART. XLII.—*Cantho-plasty as a Remedy in Certain Diseases of the Eye.*

By C. R. AGNEW, M.D., Clinical Professor of Diseases of the Eye and Ear, College of Physicians and Surgeons, New York; Surgeon to the Manhattan Eye and Ear Hospital, etc. Pamphlet pp. 10. G. P. Putnam's Sons, 1875.

AFTER a brief statement of the hygienic and therapeutic measures needed to contend successfully with phlyctenular inflammation of the eye, the author mentions the well-known clinical fact that cases present themselves in which the disease is obstinately persistent, or has a tendency to recur; and in which ulcer of the cornea or pannus, etc., renders the prognosis unfavourable, and demands more energetic treatment.

He compares the spasm of the orbicularis to a similar condition resulting from an irritable ulcer in the rectum, and urges a surgical treatment analogous to the division of the sphincter ani. He gives his testimony in favour of the operation known as Cantho-plasty, and describes, with good illustrations, the method which his clinical experience has found best, and concludes his paper with a list of one hundred and ninety-one cases in which it has been performed.

His large experience and reputation as a careful clinician render this contribution of value, and his advice can be fully accepted by the general practitioner, who has exhausted his therapeutical resources in the obstinate cases.

W. T.

ART. XLIII.—*Transactions of the College of Physicians of Philadelphia.*

Third Series. Vol. I. 8vo. pp. 192. Philadelphia, 1875.

THIS elegant volume reached us too late for a full notice, but this will be the less regretted by our readers since full abstracts of the papers it contains have been already laid before the profession in the pages of this or of contemporary journals.

Besides a list of the officers of the College the volume contains twelve papers by eleven authors, with two chromo-lithographs, and twenty-nine wood-cuts. All these papers are valuable contributions to our science, and they are presented in a style creditable to the taste of the committee of publication, and worthy of the venerable and eminently respectable body under whose auspices they are published.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *Animal Heat*.—M. Ct. BERNARD made an interesting communication on the subject to the French Association for the Advancement of the Science at its recent meeting. He treats of it especially in a topographical point of view. He recalls the fact that the source of animal heat has been successively located in the lungs, in the capillaries, in the muscular tissue, etc. M. Bernard asserts it has no single source; heat is generated everywhere, but there are points where it is higher, all being regulated by definite laws. According to Lavoisier, arterial blood has a higher temperature than venous; which M. Bernard maintains is entirely erroneous, as shown by his experiments.

M. Bernard draws from his researches the following clinical conclusion, viz., that fever is a purely nervous phenomenon resulting from modification of disturbances in the nervous system. He believes that there exist two orders of vasomotor nerves—dilators and constrictors. Fever is the result entirely of profound modifications of this system, the principal result of which is an elevation of temperature.—*L'Union Médicale*, Sept. 4, 1875, and *Revue Scientifique*, August 28, 1875.

2. *Composition of Pus and mode of formation of Leucocytes of Pus*.—In a memoir recently presented to the Academy of Sciences, M. BERGERET, of St. Léger, gives the results of a long series of investigations he has undertaken in regard to the composition of pus, and the mode in which the leucocytes it contains are formed. He finds that every collection of pus, whatever may be its origin, contains pyocytes in three stages of development. 1. Young leucocytes not more than twenty-four hours old. These contain mobile corpuscles of various sizes and forms—globular, linear, cylindrical, in chaplets, or dumb-bell-shaped, or hemispherical, and conceal the nuclei. The pus-corpuscles are highly hygroscopic, and, when immersed in water, swell till they burst, discharging their granular contents and nuclei into the surrounding medium. 2. Young leucocytes from twenty-four hours to four days old. The nuclei of these are very apparent; a portion of their contents is still mobile, the remainder is attached to the nuclei and renders them granular. These leucocytes are smaller than the former, and irregular in form, in consequence of the envelope having contracted adhesions to the nuclei. They are less hygroscopic, but still swell in water usually more or less irregularly; and the granules they contain, at first quiescent, soon begin to move, and escape when the envelope bursts. 3. Old leucocytes, the age of which is more than four days. These are small and crenulated, have lost their hygroscopic properties, and their

granules are no longer capable of reacquiring movements after imbibition of water.

In addition to the leucocytes, pus is also composed of serum, and in the serum float numerous mobile granulations of the same form as those contained in the interior of the leucocytes; their movements are, however, much more free, and whilst some may be observed merely to oscillate, others traverse the field of the microscope with more or less rapidity and in every direction. These granulations also, like those in the pus, only remain lively for about four days. After this they group themselves together, and form the small amorphous granular masses which are always met with in collections of pus, but especially in chronic abscesses.

M. Bergeret explains the formation of pus in a blister by pointing out that on the under surface of the detached epithelium there is a layer of amorphous mucus, which constitutes a pyogenic medium. He is opposed to Virchow's views.—*Lancet*, Sept. 4, 1875.

3. *Presence of Fluid in the Sac of the Dura Mater.*—Dr. E. HIRTZIG, of Berlin, points out the exact situation of the extra-ventricular fluid within the skull. It is the almost universal experience of pathologists that after death the dura mater is applied to the surface of the brain; or, in other words, that the parietal layer of the arachnoid is applied to the visceral. When fluid exists outside the ventricles, it is not met with in the cavity of the arachnoid, but in the meshes of the pia mater, or the subarachnoid spaces. Hence there have arisen serious doubts whether this sac of the dura mater or arachnoid, using these terms as equivalent, is properly a serous sac. The present author, in his numerous vivisections of dogs, has convinced himself of the existence of fluid in the sac of the dura mater in the living animal. He has observed a hundred times that when the skull is trepanned, and a cut made in the dura mater, fluid wells out in no insignificant quantity. He found, however, that if the head of a dog is examined twenty-four hours after death, there is no fluid in the sac; but if a wedge-shaped piece of brain substance is cut out, the apex opening the ventricle, the cavity becomes filled with fluid. The question is, What has become of the fluid which during life existed in the sac? He believes it to be absorbed by the brain substance, and that its absorption is due, not to any hygroscopic character of the brain substance, but to the existence of an elastic pressure of the brain. During life the pressure of the secretion of the fluid counterbalances the elastic pressure of the brain, but after death the former disappears, and the latter, acting alone, causes absorption of the fluid. There are several facts confirmatory of the existence of this elastic pressure of the brain. If the skull of an animal be opened soon after death, fluid still exists in the sac, and exists at a certain pressure, welling out when the dura mater is opened. This pressure cannot be due to the pressure of the circulation, which has ceased, but must depend on brain pressure. Then, even after the entire absorption of the fluid, a cut made through the soft membranes causes the brain substance to project, showing a certain pressure. It has also been mentioned that, on the removal of a wedge-shaped portion of brain substance, the cavity is filled with fluid, which shows, at least, that the brain is not hygroscopic, and is presumptive of pressure. By opening the skull of dogs at various periods after death, it was seen that the absorption of fluid was gradual. From these observations the author deduces some hints as to the interpretation of certain facts by pathologists. It is evident that if fluid always exists in the sac of the dura mater during life, and is absorbed after death, the superficial layers of the brain substance must always be found in a state of maceration. From the existence of the elastic pressure it seems obvious that acute exudations will disappear much more rapidly after death than chronic ones—the long existence of the latter probably reducing the elastic pressure. These remarks apply to exudations both on the surface of and beneath the arachnoid. It is very possible that many an acute hydrocephalus externus is set down at post-mortem examination as an oedema of the brain. It also appears from these remarks that when we find fluid in the pia mater, either the brain has lost its elasticity, or it has diminished in volume, so

that in either case it no longer presses the fluid into its own substance. The author calls the attention of alienists to this subject, as well as to the fact, reported by some, of the rare existence after death of fluid in the sac of the dura mater itself.—*Glasgow Med. Journ.*, July, 1875, from *Reichert and Du Bois-Reymond's Archiv*, Part III., 1874.

4. *Cerebral Hemorrhage with Hemianæsthesia*.—The occurrence of hemianæsthesia in lesions of the cerebral hemisphere has thrown much light upon the localization of brain function. From the post-mortem researches of Türck, and the experiments undertaken by Veysierre, it has now been pretty well established that anæsthesia of one-half of the body is most marked when the lesion invades the white matter just outside the optic thalamus, where the cerebral peduncle passes into the radiating crown of Reil—the part called by M. Charcot and others the “internal capsule”—and the neighbouring white substance of the posterior lobe. A case recently related by M. RAYMOND at the Société Anatomique fully bears this out. It concerned a woman eighty-nine years of age, who was under the care of M. Charcot at the Salpêtrière Hospital, who was attacked with apoplexy. There was profound coma, partial right hemiplegia, and complete right hemianæsthesia* (no kind of stimulus applied to the skin leading to any response). On the left side both motor power and sensibility were perfectly retained. There was no appreciable difference in temperature between the two sides. Death occurred on the day after the seizure; and there was found a recent clot in the left hemisphere, taking a linear direction from the anterior extremity of the nucleus caudatus to about four centimetres from the posterior part of the occipital lobe. It involved the whole of the island of Reil, as well as part of the lenticular nucleus of the corpus striatum. The caudate nucleus and optic thalamus were free. M. Charcot remarked on the riband-like form taken by the clot, as being determined by the direction of the bundles of nerve-fibres between the lenticular nucleus and the “external capsule.”—*Lancet*, Aug. 14, 1875.

5. *Glycogenic Function of the Liver*.—Prof. LUSSANA, of Padua, asserts that glycogen is not a physiological product of the liver; that there is, as he expresses it, “no hepatic function of glycogenesis.” This statement is made on the strength of a series of experiments extending over the last five years, in all of which the liver was examined immediately after death. Various animals—pigeons, fowls, frogs, rabbits, and dogs—were used. A large porcelain basin was kept ready full of boiling water, and the instant the abdomen was opened the vessels and ligaments were rapidly divided, and the liver removed and thrown into it. In the still boiling liquid the liver was cut up into very small pieces, this procedure lasting an hour, and then all was allowed to cool. The residue was then strained, and if necessary, repeatedly filtered, until the filtrate was absolutely colourless and transparent, and free from all albuminoid substances. In not a single experiment conducted in this way could Lussana detect the faintest trace of glycogen; on the other hand, this substance was always found in varying amount in livers which were not examined until some little time after the death of the animal, the quantity being proportional to the length of the interval which elapsed before examination.—*Med. Times and Gaz.*, Aug. 14, from *Centralblatt*, July 31, 1875.

6. *The Discharge of Ova, and its Relation in Point of Time to Menstruation*.—It is still a vexed question among physiologists at what period the human ovary discharges its products into the Fallopian tubes. The general belief is that the ova are thrown off towards the end of the menstrual flow or immediately after its cessation. Dr. JOHN WILLIAMS, Assistant Obstetric Physician to University College Hospital, however, in a note communicated to the Royal Society, and published in *Proceedings* No. 162, brings forward a number of cases which tend to prove that the discharge of ova really occurs before the appearance of the monthly flow with which it is connected. In ten out of fourteen bodies of women dying of various diseases, either a day or two before, or two or three weeks after, the ordinary catamenial period, rupture of a

Graafian follicle, or hemorrhage into its cavity, had occurred before the return of the menses. Of the other cases—in one it was doubtful whether rupture of a follicle or the appearance of the discharge would have taken place first; in two a menstrual period had passed without maturation of a follicle; and in the fourth a periodical discharge was imminent, though the ovaries contained no matured Graafian follicle. Dr. Williams finds that other writers, who have recorded cases similar to his, in the main favour the view he supports. Reichert, however, who has examined the bodies of twenty-three women, in whose organs signs of menstruation were recognizable, arrived at the conclusion that rupture of the Graafian follicle takes place at an early stage of the menstrual flow.—*Medical Times and Gazette*, Aug. 28, 1875.

7. *Researches on the Mamme of new-born Infants.*—Dr. DE SINETY has published (*Archives de Physiologie*, May—July, 1875) an account of some interesting investigations made by him in the histological laboratory of the College of France on the mamme of new-born infants. From these researches he draws the following conclusions:—

1. That the milk obtained from the mamme of new-born infants, some days after birth, is the product of a true secretion.

2. That the anatomical and physiological condition of the mammary glands at this period corresponds in many respects to that observed in adult females during lactation.

8. *Rotatory Motion of the Heart.*—H. WILKENS gives an interesting account of the motions of the heart as directly observed by him in the case of a man in whose thorax there was a wide fistula. By directing reflected sunlight into this fistula, the motions of the heart, covered by the pericardium, could be distinctly perceived. The heart was much displaced towards the right side. With every systolic act the left and rather sharp border moved forwards and to the right, the vertical groove, which could be seen through the pericardium, taking up a position at the same time more in the centre of the latter, a large portion of the left ventricle coming into view anteriorly. Simultaneously the whole organ was also distinctly observed to be forced downwards. These visible motions were further corroborated by actual examination with the index finger thrust in through the fistula. A small rod fastened to the heart near its apex (as was proved *post-mortem* by minute spots of extravasated blood), and to which another rod was attached transversely, showed that the point fixed in the heart described a curve, the concavity of which looked inwards, running from behind forwards and downwards. The author views the systolic rotatory motion of the heart, and of the impulse of the apex observed in this case, in the light of Bamberger's and Kornitzer's theory; and points out that the arrangement of the muscular fibres of the heart, and particularly of the middle spinal layer, must bring about a rotatory movement of the apex also during contraction, as was here seen (from the observer's right to left). He shows further that the rebound, according to Skoda, besides causing the heart to move downwards, must also favour the twisting, already commenced, of the whole organ.—*Dublin Journal Med. Science*, July, 1875, from *Deutsch. Archiv für Klin. Med.*, 1874.

MATERIA MEDICA, GENERAL THERAPEUTICS, AND PHARMACY.

9. *Bromhydrate of Quinia.*—Prof. GUBLER states (*Journal de Thérap.*, July 10, 1875) that he has frequently employed this new preparation, both in private and in hospital practice, and that it has the advantage of being more rich in the alkaloid and more soluble in various menstrua than the sulphate of quinia. He gives usually 0.40 centigramme in two doses daily, sometimes reaching 0.60 or 0.80 centigramme; and, on very rare occasions, one gramme.

He has also used it hypodermically. The only case which he relates is one in which the bromhydrate was successfully employed in treating incoercible vomiting in pregnancy.—*Med. Times and Gazette*, July 31, 1875.

10. *Physiological and Therapeutic Action of Nitrite of Amyl*.—SAMELSOHN protests against the prevailing idea that our knowledge of the physiological action of amyl-nitrite is sufficiently complete to serve as a basis for its remedial use. We do not understand the exact mechanism of the vascular dilatation caused by it, and we are equally ignorant of its extent and distribution. Our ignorance on those points should make us cautious.

Sander has recorded cases in which sudden collapse followed closely upon its administration. Samelsohn furnishes a detailed account of a similar instance. The patient, a somewhat anæmic young woman, suffering from symmetrical blepharospasmus, was being exhibited before the Medical Society of Cologne. It was suggested that the effect of nitrite of amyl upon the spasmodic closure of the eyelids should be tested. A narrow-necked phial, containing about fifteen grammes (225 grains), was held under one nostril, and the patient directed to take several deep inspirations. As soon as the usual change in the pulse occurred, the phial was withdrawn. The face, previously pale, was now suffused with a crimson flush, and the eyes opened widely. In an instant, however, the flush was replaced by a deadly pallor; the pulse became thread-like and slow, the skin cold and clammy, respiration difficult and gasping; consciousness was retained. These alarming symptoms passed off, but only to recur again and again; a full hour elapsed before the patient could be said to be out of danger. Even after the pulse and breathing had become normal, she still complained of feeling very cold; and this sensation lasted till the next day. The blepharospasmus disappeared for thirty-six hours, at the end of which time it returned. To what ought these symptoms be attributed? The sample of the drug was perfectly pure, and was repeatedly inhaled by other patients without producing any unusual effect. The dose was measured by its effect upon the pulse, and there was no reason to suspect that it was excessive. Sander ascribed the collapse which occurred in some of his cases to a contraction of the vessels of the pia mater, immediately consequent upon their undue dilatation, and causing cerebral anæmia. But on this hypothesis convulsive symptoms might have been expected to occur, and none such were noticed. Samelsohn prefers to explain the phenomena otherwise. As a general rule, the vascular tension is quickly restored after its depression by amyl-nitrite. In anæmic persons, however, we may suppose that the muscular walls of the vessels react less promptly, and that the elasticity of the arterial coats is impaired. Now it is well known that a sudden accumulation of blood in any part of the vascular area diminishes the supply of that fluid to the heart, placing it in the position of a pump with too little water to fill it, and thus embarrassing its action. Moreover, the girl was menstruating at the time, and her pelvic viscera were loaded with blood. That this was one of the factors concerned is rendered likely by the circumstance, that she subsequently inhaled the nitrite vapour more than once without any return of the symptoms which caused so much alarm on the first occasion.—*London Medical Record*, August 16, from *Berliner Klinische Wochenschrift*, June 14, 1875.

11. *Physiological Action of the Preparations of Bromine*.—Dr. STEINAUER observes that the value of the bromides is attributed by some therapeutists, as Schouten and Binz, to the alkali, whilst others consider it to be due to the bromine. In order to settle this point he made a series of experiments with different preparations of bromine, in some of which the preparation used consisted of a stable compound of bromine, and was eliminated by the urine in an unchanged condition, whilst in others the compound was instable, and was decomposed in the system, so that the bromine was discharged in the free state. The results of his experiments were as follows: 1. The bromine compound exhibits an energetic action only in those chemical compounds in which there is a possibility of the bromine atom being detached. Experiments with hydrobromic acid and monobromated acetic acid, made both upon cold-blooded

and warm-blooded animals, gave constantly the same results—namely, that, in doses in which the acetic acid of the compound subcutaneously injected in an equal state of dilution produced no effect at all (as in frogs in 0.005–0.3 gm. doses, and in rabbits in doses varying from 0.05–1), the monobromated acetic acid rapidly produced a lowering effect upon the pulse and respiration, until the heart was completely arrested. Researches made with the aid of artificial respiration showed that the action on the heart was the primary one. Other researches, in which after section of the vagi and after paralysis of its intracardiac terminal nerve-fibres with nicotin, after which the action of the bromine was still apparent, showed that the action of the bromine was essentially upon the heart itself. Lastly, researches in which the experiments known as Stannius' and Munks' failed showed clearly that the action of the bromine was to paralyze both the cardiac muscle and the excito-motor cardiac nerve centre. Steinauer further observed that the bromo-acetic acid effected a diminution in the excitability of the ganglia of the spinal cord, as well as of the peripheric nervo-muscular apparatus. After the administration of the poison the animal lost its sensibility for tactile (contact and pinching) and chemical (brushing with acid) stimuli, and the same occurred after elimination of the influence of the will upon movement by division of the cord between the occiput and first vertebra, no reaction being obtainable at a period when in other animals not under the toxic influence of the drug, mechanical and electrical excitation of the nerves still caused active contraction. The reflex paralyzing influence of the bromine was not referable either to the affection of the motor nerves or to the enervated muscles, but to its action upon the spinal centres.

In regard to those preparations of bromine which were so stable that the bromine would not separate, as in monobrombenzol and sodium bromobenzoate, no free bromine appeared in the urine; it was found in these cases that the substituted atom of bromine caused an alteration of the nutritive processes and the action of other compounds.—*The Practitioner*, Aug. 1874, from *Virchow's Archiv*, lix. p. 65, and *der Prakt. Arzt.*, No. 2. 1875.

12. *The Physiological Action of the Chinoline and Pyridine Bases.*—A paper on this subject by Dr. J. G. McKENDRICK and Prof. DEWAR was read before the Section of Anatomy and Physiology of the British Medical Association at its recent meeting at Bristol. The following is an abstract: It is well known that quinine, cinchonine, or strychnine yield, when distilled with caustic potash, two homologous series of bases, named the pyridine and chinoline series. Bases isomeric with these may also be obtained by the destructive distillation of coal, or from Dippel's oil, got from bone. Greville Williams has pointed out that chinoline obtained from coal-tar differs in some respects from that yielded by cinchonine. In this research, the author endeavoured to ascertain (1) the physiological action of the various members of the series; (2) whether there was any difference in this respect between the members of the series obtained from cinchonine and those got from tar; and (3) whether, and if so, how, both as regards extent and character, the physiological action of these bases differed from that of the original alkaloidal bodies. The bases in both series are difficult to separate from each other; but this has been done as far as possible by repeated fractional distillation. The salt employed was the hydrochlorate. This, dissolved in water, was introduced by a fine syringe under the skin of the animal. The action of chinoline was tested on frogs, mice, rabbits, guinea-pigs, cats, dogs, and man; but as the effects were found to be similar in all of these instances, the majority of these observations were made on rabbits. The experiments with the other substances were made on rabbits and frogs. The physiological action of hydrochlorate of chinoline was first examined. Its action was then compared with that of the hydrochlorates of the chinoline series of bases distilling at higher temperatures, including such as lepidine, dispoline, tetrahiroline, etc. In the next place, the physiological action of the pyridine series was studied, beginning with pyridine itself, and passing upwards to bases obtained at still higher boiling-points, such as picoline, lutidine, etc. Lastly, the investigation was directed to the action of condensed bases, such as dipyridine, parapicoline, etc.; and the effects of these

substances were compared with those produced by the members of the chinoline series and among themselves. The following are the general conclusions.

1. There is a marked gradation in extent of physiological action of the members of the pyridine series of bases, but it remains of the same kind. The lethal dose becomes reduced as we rise from the lower to the higher.
2. The higher members of the pyridine series resemble in physiological action the lower members of the chinoline series, except (1) that the former are more liable to cause death by asphyxia, and (2) that the lethal dose of the pyridines is less than one-half that of the chinolines.
3. In proceeding from the lower to the higher members of the chinoline series, the physiological action changes in character, inasmuch as the lower members appear to act chiefly on the sensory centres of the encephalon and the reflex centres of the cord, destroying the power of voluntary or reflex movement; while the higher act less on these centres, and chiefly on the motor centres, first, as irritants, causing violent convulsions, and at length producing complete paralysis. At the same time, while the reflex activity of the centres in the spinal cord appear to be inactive, they may be readily roused to action by strychnine.
4. On comparing the action of such compounds as C_9H_7N (chinoline) with $C_9H_{13}N$ (parvoline, etc.), or $C_8H_{11}N$ (collidine) with $C_8H_{15}N$ (conia, from hemlock), or $C_{10}H_{10}N_2$ (dipyridine) with $C_{10}H_{14}N_2$ (nicotine, from tobacco), it is to be observed that the physiological activity of the substance is, apart from chemical structure, greatest in those bases containing the larger amount of hydrogen.
5. Those artificial bases which approximate the percentage composition of natural bases are much weaker physiologically, so far as can be estimated by amount of dose, than the natural bases; but the kind of action is the same in both cases.
6. When the bases of the pyridine series are doubled by condensation, producing dipyridine, parapicoline, etc., they not only become more active physiologically, but the action differs in kind from that of the simple bases, and resembles the action of natural bases or alkaloids having a similar chemical constitution.
7. All the substances examined in this research are remarkable for not possessing any specific paralytic action on the heart likely to cause syncope; but they destroy life either by exhaustive convulsions, or by gradual paralysis of the centres of respiration, thus causing asphyxia.
8. There is no appreciable immediate action on the sympathetic system of nerves. There is probably a secondary action; because, after large doses, the vaso-motor centre, in common with other centres, becomes involved.
9. There is no difference, so far as could be discovered, between the physiological action of bases obtained from cinchonine and those derived from tar. Dr. McKendrick also described the physiological effects of various methyl and ethyl compounds of chinoline. He alluded to the researches of Professor Crum Brown and Dr. Thomas R. Fraser on the action of methyl and ethyl strychnia as examples of a complete change in physiological action being produced by a change in chemical constitution. He and Professor Dewar had found the ethyl and methyl compounds of chinoline to have an action very different from chinoline alone. They were found to be much more active than chinoline alone, and to produce effects similar to those of the higher members of the chinoline series. He then indicated the important considerations suggested by this investigation; and said it was not too much to anticipate that the chemist may yet be able to build up compounds having effects resembling those of such valuable remedies as quinine, morphia, etc. Dr. Pye-Smith said it was gratifying to find that so important a branch of science was being investigated by two such eminent men as Dr. McKendrick and Professor Dewar. Some of the bases to which reference had been made would, no doubt, prove useful medically and physiologically, especially in the latter capacity. With regard to cinchonine, he had made some experiments with it on the human frame; and he was led to the conclusion that the further it was kept from patients the better it would be. It was certainly cheaper than quinine, but it had many objectionable characteristics. He was glad to hear of the promised advantages of chinoline, which, if realized, would help them out of the difficulties attending the administration of woorara to the mammalia.—*British Medical Journal*, Sept. 4, 1875.

13. *Quinia as a Gargle in Diphtheritic, Scarlatinal, and other forms of Sore Throat.*—Dr. DAVID J. BRAKENRIDGE observes (*The Practitioner*, Aug. 1875) that “the following facts, among others, may be regarded as established:—

“1. Quinine is a protoplasm poison, and limits the number and movements of the white blood corpuscles and pus cells.

“2. It prevents the pathological migration of the blood corpuscles into the tissues of the membranous and parenchymatous organs exposed to the air, both when it is given subcutaneously and when it is directly applied to the part.

“3. It restrains the dilatation of the bloodvessels.

“4. It is an antiseptic, and exerts a paralyzing, or, in larger doses, a destructive influence on microzymes.

“With these facts in view, the theoretical appropriateness of quinine as a gargle in diphtheria with abundant proliferation of micrococci, and in scarlatinal, and various other forms of sore throat, especially when attended with membranous exudation, pultaceous secretion, or ulceration, is apparent. For it antagonizes all the visible factors of such forms of inflammation.

“Before employing it for this purpose, I was familiar with the use of solution of quinine as a dressing in bed-sores and other tedious ulcers. The marked diminution in the secretion of pus and the rapid improvement which I observed to take place in these cases when so treated, first led me to anticipate good results from quinine as a gargle.

“For the last four months I have treated every suitable case of sore throat that I have met with in my wards in the Royal Infirmary and elsewhere, with a gargle composed, as a rule, of two grains of sulphate of quinine and five minims of dilute sulphuric acid to each ounce of water. Sometimes I have been able to increase the strength; sometimes I have been compelled to diminish it. When well tolerated, the stronger it is the better.

“The results I have obtained fully confirm my favourable anticipations. From a considerable number of cases I draw the following conclusions:—

“Simple non-syphilitic ulcers of the throat, under this treatment, at once assume a healthier aspect and heal rapidly.

“In syphilitic ulcers, the local treatment has always been accompanied by the internal administration of iodide of potassium, or some other suitable constitutional remedy; but my impression is that, in these cases, the cure is hastened by the quinine gargle.

“Its effect in the sore throat of scarlatina is very marked, the pultaceous secretion being checked, and the inflammatory swelling diminished.

“It is of comparative little use in the early stage of cynanche tonsillaris, over which tincture of aconite, in minim doses frequently repeated, has so decided a control. When, however, abscess followed by abundant discharge of pus results, its beneficial influence in checking the suppuration and promoting healing is marked.

“In the slighter forms of diphtheritic sore throat, it answers admirably, preventing the extension of the disease, and promoting the separation of the membranous exudation.

“It is, however, in severe cases of true diphtheria that I hope it will prove most useful. I have now employed it in three cases of this disease, and in all the result has been highly satisfactory.”

14. *Action of Mercury on the Liver.*—Sir ROBERT CHRISTISON, in his instructive presidential address before the British Medical Association at its meeting the present year, stated, that, “While deeply interested in, and much instructed by, the experiments performed by a Committee of this Association, regarding the use of mercury, for example, I remain as thoroughly convinced as ever that the much abused drug in question exerts a powerful action on the function of the liver, and is to be trusted as a most efficient remedy in controlling not a few of its disorders.”—*Brit. Med. Journ.*, August 7, 1875.

15. *Narcolism by the Products of Tissue Change after Fatigue.*—The fact that severe fatigue, either of the muscular or nervous system, predisposes to sleep, has led Dr. W. Preyer, of Jena, to make experiments with those sub-

stances which are most likely to be formed in the tissues after such exertion, especially lactic acid, to see whether they possess any narcotic properties. He finds, after a long series of observations and experiments, that lactate of soda, either subcutaneously injected in a concentrated aqueous solution, or else introduced into the empty stomach in large doses, frequently induces sleep if the subject of the experiment is kept quiet and undisturbed. There are, however, considerable individual differences in its effects both on animals and men, not only as to the time of onset of sleep, but also as to its duration and intensity. Young and small animals are affected more easily than old and large animals. Preyer finds that the exhibition of such liquids as are favourable to an abundant production of lactate of soda in the intestinal canal—*e. g.*, concentrated syrup, or copious draughts of sour milk and of whey—in many cases gives rise to drowsiness, and even actual sleep; and he thinks that this fact might be of practical application in some diseases where morphia and chloral are now exclusively ordered. Lactate of soda, in doses much larger than are required to induce sleep, increases the number of the respirations and also their depth; and reflex irritability and (in warm-blooded animals) the temperature are diminished. Dr. Preyer, from his experiments on animals, is strongly opposed to the use of the lactates of potash, magnesia, and lime for narcotic purposes in the human subject.—*Medical Times and Gazette*, Aug. 28, from *Centralblatt*, No. 35, August, 1875.

16. *A Method of increasing the Solubility of Salicylic Acid.*—An objectionable property of the new antiseptic, and threatened rival of carbolic acid—salicylic acid—is its insolubility in cold water, so that it has been, till now, impossible to obtain a stronger solution of it than 1 part to 300; while the alcoholic solution and the pure acid are too irritating to be applied directly to a wound. Those, therefore, who are specially interested in comparing the antiseptic properties of the two acids, will be glad to know that the solubility of the latter is enormously increased by the addition of borax to the water, so that as much as ten parts of the acid can be dissolved in 100 parts of water, if eight parts of borax be present. This discovery we owe to Dr. H. Bose, assistant in the Surgical Clinic at Berlin, who has contributed a paper of much interest to the *Berliner Klinische Wochenschrift* (No. 28, July 12), to which we are indebted for the following details. The solution should be made by first dissolving the borax with the aid of heat, and then gradually adding the salicylic acid to the boiling fluid. Since commercial samples of both these drugs are not chemically pure, a small amount separates, and requires to be filtered off on cooling. The filtrate is a clear yellowish or light-brown fluid, according to its concentration. The proof that the addition of borax does not convert more than a part of the salicylic acid into salicylate of soda—a salt devoid of antiseptic properties—is easily shown; for if we dissolve 6.9 parts of the acid in 100 parts of boiling water, and then add 2.89 parts of bicarbonate of soda, the carbonic acid in the latter is set free, while the soda combines with the salicylic acid, and on cooling there is such an abundant deposition of the excessive acid that the whole liquid becomes nearly solid, owing to the formation of crystals. Now if the whole be reheated until the acid is completely dissolved, and then 3.58 parts of boracic acid added, no deposit of any kind occurs on cooling. The most suitable strength in which the above solution can be used for direct application to wounds, is, according to Dr. Bose's experience, one which contains from $2\frac{1}{2}$ to 5 per cent. of salicylic acid, and 2 to 4 per cent. of borax. Solutions containing more than 5 per cent. of acid are too irritating, and give rise to a very abundant capillary hemorrhage if applied to the surface of a fresh wound. Dr. Bose speaks highly of the result obtained with the boro-salicylic dressing in a number of cases of removal of small tumours. The operations were all performed without the spray, and only the sponges and forceps used were cleansed antiseptically with the above solution. The wound was thoroughly washed with the same liquid, and then a thick layer of salicylic wadding, also soaked with it, was laid on its apposed edges, so as to reach several fingers' breadths beyond them, and fixed by means of a bandage; catgut was used to tie any vessels

requiring ligature. In those cases where the edges of the wound could not be accurately brought together, Dr. Bose put in catgut sutures, and then filled the spaces between the edges with the salicylic solution by means of a small syringe, and applied the wadding over all. The greater number of the cases thus treated healed by first intention, without the formation of a drop of pus. Dr. Bose concludes his paper by stating that he has as yet no experience of the value of the boro-salicylic acid solution in dressing *large* wounds, and that he has not found it invariably successful in the case of small ones, but he thinks that the frequency of small-wounds in practice, the simplicity of the method, and the facility with which healing by first intention can be obtained by it, renders it worthy of a passing notice.—*Med. Times and Gazette*, July 24, 1875.

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

17. *Subcutaneous Injections of Pure Water*.—Dr. LAFFITTE communicated a note to the French Association for the Advancement of Science on the employment of subcutaneous injections of pure water, and the relief to pain which has resulted therefrom in numerous affections. He asserts that they are as markedly efficacious as injections of morphia. He ascribes their calming effect to the compression of terminal nervous filaments by the injected water.—*L'Union Médicale*, Sept. 4, 1875, and *Revue Scientifique*, Aug. 28.

18. *Transfusion*.—Prof. POXICK, of Rostock, finds that when the blood of a different species of animal is used in transfusion, serious effects follow, which often lead on to death. The red corpuscles of the dissimilar blood undergo disintegration in the vessels of the animal, and the hæmoglobin is set free. This is excreted by the kidneys, and so we have hæmoglobinuria. If a small quantity of blood is used, the kidneys are equal to the elimination of the hæmoglobin, but larger quantities lead to an inflammation of the kidneys, with the usual formation of tube casts and interference with the secretion of urine. If even similar blood is first frozen repeatedly, so as to destroy the corpuscles and set free the hæmoglobin, and then injected, it produces similar results. If dissimilar blood is transfused, therefore, as a therapeutic agent, it must be for the sake of the plasma and white corpuscles, and only in small quantities.—*Glasgow Med. Journal*, July, 1875, from *Virchow's Archiv*, Part III., Jan. 1875.

19. *Method of instantaneously arresting Palpitations of the Heart*.—Dr. J. LARDIER describes (*L'Union Médicale*, August 21st) a method by which he asserts that palpitations of the heart, not due to any material lesion of that organ or of the nervous centres, may be instantaneously arrested. He discovered this means accidentally, when troubled himself with palpitations. Since then he has directed many of his patients suffering from this trouble to bend their body, the head down, and the arms hanging so as to momentarily cause congestion of the upper part of the body. In all cases of nervous or anæmic palpitations the heart quickly resumed its normal action. He adds that if, while in the above-described position, respiration is arrested for a few seconds only, the relief afforded is still more speedy.

20. *Treatment of Acute Rheumatism by Tincture of Perchloride of Iron*.—Dr. J. RUSSELL REYNOLDS, of London, read a paper on this subject, at the late meeting of the British Medical Association (*British Med. Journal*, Aug. 21, 1875). He commenced by referring to the paper on the same subject, which he read at the meeting of the Association in 1869. He now, by the citation of a number of cases, showed how early relief had been afforded, not only from pain, but from the abnormal heat, by the use of the remedy referred to. Of the cases cited, 44 per cent. of first attacks were convalescent within

the first week, while of those in their second, third, or fourth attacks, 42 per cent. recovered within the same period.

Dr. CREIGHTON, of Tavistock, said he had been in the habit of treating cases of rheumatic fever with large doses of tincture of perchloride of iron, combined with liquor ammoniæ acetatis, and the results had been that the fever, which otherwise would not have been subdued within, say six weeks, had been reduced within ten days or a fortnight. At the same time, under that treatment he found that the amount of heart disease accompanying rheumatism had been very greatly reduced.

21. *Treatment of Aneurism of the Arch of the Aorta by means of Galvano-Puncture.*—Dr. T. McCALL ANDERSON read a paper on this subject at the recent meeting of the British Medical Association (*British Med. Journal*, August 21, 1875). After giving a report of two cases in which this treatment was carried out with success, Dr. Anderson laid down the following rules: 1. The continuous-current battery should always be employed, never the induction apparatus. 2. The kind of battery is of less consequence, if it be in good working order; but the cells should be large, so as to increase the chemical effect. 3. The needles should not be very thick, but very sharp, and should be oiled before being introduced, and that portion of them which traverses the skin, walls of the sac, and intervening tissues, should be insulated by means of a coating of vulcanite. 4. The needles should be connected with the positive pole of the battery. 5. A weak current of electricity should be used (from four to eight cells of a large Stöhrer's battery), and the operation may be continued for about an hour. 6. The number of operations, and the length of the intervals between each, must depend upon the effect of those which preceded them. Dr. Anderson concluded by referring to the dangers connected with the electrolytic treatment, viz., inflammation, and the entrance of air and of clots into the circulation; and observed that it was a question to which attention should be specially directed in the future, whether the consolidation of that portion of the aneurism which approaches the surface may not, in some cases at least, favour the extension of the disease in other directions, and lead to internal pressure-symptoms, and to rupture into internal organs. Dr. Clifford Allbutt (Leeds) stated, as the result of his experience, which was drawn from five or six cases, that the mode of treatment described by the author must be considered as successful. The points on which success depended he regarded as the use of a feeble current (five cells), with Ladd's galvanometer, derived from large plates, and the introduction of the positive pole only. It was well also to use several needles, all connected with the same pole. Strong currents were injurious, and small plates did not give so good results. Notwithstanding this, the author said, embolism must be regarded as a risk. It occurred the day following one of his operations, in which he had introduced both poles into the sac. Dr. Anderson, in replying, remarked that it must be remembered that, when embolism occurred after an operation, it did not necessarily follow that it was due to the mode of treatment.

22 *Treatment of Acute Cerebral Rheumatism by Chloral Hydrate.*—M. RAYMOND communicated to the Biological Society of Paris (*Gazette Hebdom.*, No. 14, 1874), a case of cerebral rheumatism successfully treated by chloral hydrate; and M. Bouchut communicated to the French Academy of Sciences (May 3, 1875) three cases of the same disease equally successfully treated by the same drug. We have thus four cases of confirmed and severe cerebral rheumatism successfully treated by chloral hydrate.—*Gazette Hebdom.*, 11 June, 1875.

23. *Hypodermic Injection of Chloral in Cholera.*—Surgeon A. B. HALL highly extols the efficacy of hypodermic injections of chloral in cholera, and adduces some strong testimony from others who have tried it as to the success attending this mode of treatment. Mr. H. attaches great importance to the strength of the solution used, which should be one part of chloral hydrate to ten of water. If stronger than this it may not be absorbed into the blood.

Of this solution of ten grains of the salt to one hundred minims of water, ten to twenty drops may be used at once—the former dose is generally sufficient—and be repeated.

24. *Diabetes Insipidus treated beneficially by Jaborandi*.—Two cases of polydipsia treated by Prof. LAYCOCK with jaborandi, are reported (*Lancet*, Dec. 14) by his assistants. In both cases the amount of urine was largely decreased after the administration of jaborandi.

25. *Nitrate of Soda in Dysentery*.—Dr. CASPARI recommends the nitrate of soda in large doses for the treatment of acute dysentery. This salt was largely employed by Rademacher, who asserted its superiority to all other antidyenterics. Caspari's experience is chiefly derived from the Frankfurt Hospital, where 30 per cent. of the cases, in the autumn of 1871, consisted of acute dysentery. The remedy is as effectual in the rectal form of the disease as in the intestinal variety; when there is reason to believe that the small bowel is much involved, smaller doses ought to be given than when the inflammatory mischief is limited to the lower end of the large intestine. From three to six drachms of the salt may be administered in the course of twenty-four hours, in divided doses; the solution should always be given warm.—*London Medical Record*, August 16, from *Bulletin Général de Thérapeutique*, June 30, 1875.

26. *Gelsemium Sempervirens in Neuralgia*.—This article, which has had reputation in this country for neuralgia, has attracted little attention in Europe. It has been recently tried at the Dispensary at Heidelberg by Dr. JURASZ, Ass. Phys., who has reported favourable results. Five minims of the tincture were given three times a day for three days to a man æt. 30, who had been suffering for a week with neuralgia of the right supra-orbital nerve, which had resisted quinia and veratria treatment, and completely cured him. The same dose given for six days gave permanent relief to a woman who had had brachial neuralgia on the left side for more than a year and a half, and been treated with various other remedies without success. Two other neuralgias of the fifth nerve were rapidly cured with five and ten-minim doses; and a case of very severe sciatica on the right side in a man of sixty, which had completely disabled him and confined him to bed, was quickly relieved by eight-minim doses three times a day, and the patient was able in a fortnight to walk with a stick; the cure being completed by warm baths and the use of the constant current. On the other hand, the gelsemium failed completely in two cases of muscular rheumatism, and in a case of long-standing hemicrania.

In no instance was any unpleasant effect observed, either on the circulatory or digestive organs; but the dose of twenty minims was never exceeded.—*Med. Times and Gaz.*, Aug. 14, from *Centralblatt*, July 10, 1875.

27. *Tracheotomy in Croup and Diphtheria*.—Dr. GEO. BUCHANAN, Professor of Clinical Surgery in University of Glasgow, makes (*Brit. Med. Journ.*, Sept. 4, 1875) some interesting remarks on tracheotomy in croup and diphtheria. These diseases, he says, "but especially diphtheria, when they prove fatal, cause death in one of two ways: either by exhaustion or by suffocation. Hence, we may say there are two varieties, viz., the asthenic and sthenic. In the great majority of instances, croup is a sthenic inflammation attended with effusion of lymph in the trachea, and proves fatal by suffocation. In some cases, however, the attack is attended with such a depression of the vital powers that the patient sinks apparently from the virulence of the disease. This, however, is a rare case. But in diphtheria there are two well-marked types: the sthenic, which closely resembles an attack of sthenic croup, except that the effusion of lymph begins on the fauces and extends through the glottis into the trachea; and the asthenic, which more closely resembles scarlet fever, and in which the effusion covers the whole of the mucous membrane of the fauces, tonsils, and even the pharynx, and in which the false membrane soon becomes foul, putrid, ichorous, and contagious.

"In the former of these types, the danger is suffocation; in the latter, it is vital depression, death from asthenia."

When medical treatment has been fairly tried, and when it is proving unavailing, and when death seems imminent from suffocation, not from vital depression or exhaustion, Dr. B. thinks it is the duty of the medical attendant to perform or advise the performance of tracheotomy. Last December, he says, "I was called to a case of croup, and when I arrived I found the child, a girl seven years of age, in the last stage of suffocation. The two medical gentlemen in attendance declared that the patient was beyond the reach of surgery. One of them, who had never seen the operation, strongly dissuaded me from making the attempt; the other, who had at one time been one of my clinical students, on hearing my wish to give the child a chance, persuaded the parents to consent. The little patient was livid, and though I did not use chloroform, as I usually do, it did not wince when I made the incision through the skin. The result was that the child is now alive, and in the enjoyment of excellent health.

"To one who sees the operation for the first time, the hopelessness as to the attempt is only equalled by the surprise and gratification at the result.

"But, while I am so strongly advocating the operation in the circumstances referred to, there is one condition in the suffocative form of those diseases which contraindicates tracheotomy, and which, if discovered, should prevent any one from performing it. When the suffocation depends not only on obstruction of the trachea, but also on effusion of false membrane or the glutinous fluid which precedes it, into the smaller bronchial tubes, then the case is not one for operation. The difficulty, then, is to discover when the false membrane which causes the obstruction to breathing is limited to the trachea and larynx and when it has invaded the bronchia. Percussion and auscultation ought to assist in the diagnosis, but the restless tossing of the child and the noise of the breathing always make this a difficult proceeding.

"There are two signs which appear to me to be valuable guides: one is the amount and loudness of the stridor, which is always great in proportion to the patency of the small tubes and obstruction in the trachea.

"But the most valuable test is a view of the naked chest. When the obstruction is in the trachea, while the bronchial tubes are free, the respiratory movements are continued with exaggerated energy, but the chest will not respond to the muscular efforts. The result is that at each inspiration the flexible parts of the thoracic walls are drawn in with great force, the intercostal spaces are hollowed, and the ensiform cartilage sucked back. But when the small bronchial tubes, and, perhaps, the air-cells, are stopped with the viscid or membranous effusion, the muscular efforts are more feeble and the chest remains puffed out, and the whole aspect is that of a child thirsting for breath, but with the lungs already full and themselves unfit for respiration. In this latter case, I never operate; in the former, with every hope of success."

Dr. B. gives a table of 46 cases of tracheotomy, of which 17 were cured and 29 died. "Tracheotomy in Group, 16. Cured 6; Died 10. Tracheotomy in Diphtheria, 30. Cured 11; Died 19.

"The average result is precisely the same, viz., one child is saved out of every two and two-thirds operated on; and, as the operation was always done when there seemed no hope of recovery otherwise, it may safely be stated that the lives of these seventeen children were saved by tracheotomy."

28. *Diphtheritic Croup; Tracheotomy; Artificial Respiration; Recovery.*—Dr. B. W. RICHARDSON reported in the *Med. Times and Gazette* (August 2, 1873), a case in which respiration carried out with the double-acting bellows led to the restoration of natural breathing five successive times, and prolonged life for thirty hours, though the patient ultimately succumbed. In the number of the same journal for July 17, 1875, he reports a second case in which the same treatment was crowned with complete success.

The subject of it was a boy five years of age, to whom Dr. R. was called in consultation March 1. The child was suffering from diphtheritic croup, and breathing with so much difficulty that suffocation seemed imminent. He was

restless, at times slightly convulsed, lips blue, and body becoming cold. "The breathing was so noisily shrill, from the narrowing of the larynx, that we had some difficulty in making a correct diagnosis of the condition of the heart, but in a brief interval of quiet I detected that both sounds of the heart were clear, and that there was no obvious indication of obstruction to the course of blood through the right side of the heart, from separation of fibrin." Dr. Wilbe administered bichloride of methylene, which produced rapid and gentle anæsthesia, when Dr. Richardson opened the trachea as low down as he could conveniently, experiencing no difficulty except from a little excess of bleeding from the divided surface of an unusually large thyroid gland. So soon as the opening was made into the trachea, there was sharp expulsion of air from the lungs, together with extrusion of a portion of false membrane. This over, he introduced the outer blades of Fuller's tracheotomy-tube, and through them the inner tube. The child was now allowed to recover from the anæsthesia, the tube being neatly and firmly tied in position. Free breathing through the tube was soon established, and the return to consciousness, from the anæsthesia, was attended by favourable symptoms. The heaving of the chest ceased, the face lost its lividity, and the surface of the body became warm.

The operation was performed at 10.30 P. M., and at 11.5 he was put to bed and fell into a short sleep. To prevent, as far as possible, the danger of death from asphyxia every available means was provided for clearing the tracheal tube, and for changing it if required, and competent assistants provided to watch the patient.

March 2. Patient had slept during the night with only two interruptions. He had fed himself with two teacupfuls of milk. He was breathing comfortably through the tube, his body was of natural warmth, and the asphyxia had entirely disappeared. He passed through this day favourably.

3d. At 1 o'clock A. M. the breathing became embarrassed, owing to plugging-up of the tube, and as the tube could not be cleared in position, Mr. Lovell was obliged to remove the inner tube. It was nearly choked with a compact mass of secretion, which adhered with great firmness. The patient now breathed easily through the outer blades of the tube, and they therefore were left simply in place. In a few hours the breathing again became embarrassed; at 3 P. M. the tracheal opening was plugged, and the patient was asphyxiated. The blades were promptly removed, and a portion of the membrane was expelled. He now for a short interval breathed through the wound, and then ceased to breathe altogether, and to common observation appeared to be dead. At this juncture Dr. Wilbe and Mr. Lovell, who happily were present, passed the elastic tube of the double-acting bellows into the wound, and set up artificial respiration. The artificial respiration brought back animation in a few minutes, and natural inspiration followed; but the artificial process had to be repeated, at times, during a quarter of an hour before independent breathing was fully re-established.

After the natural respiration was completely restored, the outer blades and inner tube were reintroduced into the trachea. The breathing continued easy during the rest of the day.

On Thursday, March 4, at 3 A. M., the breathing having once more become laborious, the tracheal tube was cleared with a feather, after which, for several hours, the breathing remained free. In the afternoon the blocking-up again occurred, and at 4.30 P. M., at a consultation at which we were all present, it was agreed to remove the metal tube, and to introduce a larger-sized vulcanite tube. As the new tube was being inserted, some false membrane was coughed through it. The patient continued to breathe easily through the vulcanite tube until 11 P. M., when some temporary obstruction occurred, and the respiration was for a little time laboured. In the course of this day the child ate a little beef finely minced, and some small pieces of orange; at intervals he took a teacupful of milk.

On the three following days the breathing at times became difficult, so that it was necessary to remove the tube and replace it with a larger vulcanite one, and portions of diphtheritic membrane were discharged.

8th. The tube was removed, and was replaced by a clean one at 8.15 A. M.

In the afternoon of the same day, after visiting the patient with Dr. Wilbe, we found the breathing sufficiently free when the vulcanite tube was out of the trachea to warrant the suggestion that the wound should be left simply open. The patient was now fairly convalescent.

From this time recovery took place rapidly. There was a slight paralysis of the glottis, and for a day or two, when the patient swallowed milk, a little of it flowed into the trachea, and escaped by the wound. But this difficulty soon passed away. The external opening healed up soundly, and in a few weeks I had the pleasure of making a friendly call, with Dr. Wilbe, to find the boy restored to perfect health.

29. *Chloral in Sea-sickness.*—Dr. OBET states, that, of all the numerous remedies he has tried for sea-sickness, chloral, recently recommended by M. Giraudeau, is by far the best, and is indeed very efficacious. Bromide of potassium, which, before the introduction of chloral, was the substance that did most good, is far too slow in its effects, and requires to be given in too large doses before any marked effect is produced, while the quantity of water necessary to enable it to be swallowed forms a serious obstacle to its employment in this affection. Chloral, on the contrary, given in the form of syrup, in a dose of from 1 to 1½ or 2 grammes, procures a calm and tranquil sleep, on awakening from which the patient finds himself, if not completely cured, at least in a state of relative comfort. On the first day of the voyage, this sleep should be at once secured by giving the patient 1 gramme (15 grains) at a single dose, and the following days 1½ or 2 grammes may be given during the day, by taking a spoonful of the syrup every hour. As a general rule, under this plan, in two or three days the sick passengers have become accustomed to the sea, and are even able to take their meals at the table. The chloral, to be useful, must always be free from all alteration, and from the action of humidity. When it has not been kept in a very dry place, so that it has become somewhat deliquescent, in place of the calm sleep so much desired, it may produce nervous irritation, sometimes of great violence. In pregnant women, several of whom the author has had in charge, this medicine also furnishes excellent results. He has not found voyaging by sea exercise any effect upon the progress of pregnancy, even violent sea-sickness not having induced either hemorrhage or premature labour. Still, voyages exert a special effect on the uterus, for under their influence there is always produced a premature return of the menses, and, in feeble women, the discharge may be sufficiently great to call for medical intervention. Constipation, which is the usual accompaniment of sea-voyages, should be most carefully obviated in the subjects of sea-sickness. Moral treatment, too, especially for women, is of great consequence, for no one can be more demoralized than the subject of sea-sickness. Chloral acts here admirably, by reason of the refreshing sleep which it procures; and the presence of the medical man greatly encourages the patient in his efforts against the state of depression that prevails. He should be encouraged, whenever possible, to come on deck to inhale the fresh air and escape the abominable smells of the cabin. The subjects of sea-sickness usually complain of insatiable thirst, and many take an immense number of lumps of ice to relieve it, but at the end of thirty-six or forty-eight hours this immoderate use of it gives rise to violent irritation of the stomach, to which is added the sensation of a hot iron passed along the œsophagus. Others prefer iced lemonade, of which they drink glass after glass, rejecting it by vomiting immediately afterwards. Brandy or whiskey is the favourite drink among the American passengers. But of all such liquids iced champagne is the best, taken in tablespoonfuls every ten or fifteen minutes. In these small quantities it is easily borne, and acts beneficially. With respect to food, the patient should be left much to his own tastes—under-done and broiled meat being, however, preferable when he can eat such. He should not be restricted to fixed hours of meals; and although on the boats the table is served five times a day, the intervals are still too long for him. It is preferable to follow Dr. Brown-Séquard's mode of treating dyspepsia with obstinate vomiting, the patient taking every quarter or half-hour one or two mouthfuls of bread and meat, or other food, with a little

iced champagne.—*Med. Times and Gaz.*, July 31, from *Archiv. de Med. Navale*, June, 1875.

30. *Collodion in Erysipelas*.—In allusion to a recently published case, in which M. Broca arrested the advance of erysipelas by surrounding the eruption with flexible collodion, applied over a breadth of six or eight centimetres all around its margin, Dr. LUBAUSKI, of Nice, writes to say that this is a practice which he has pursued with invariable success during the last thirty years—ever since, in fact, M. R. Latour introduced the medical employment of collodion. The great point is to immediately repair any breaches that may be made in the collodion circle. He has also applied collodion with great advantage to the eruption in a case of zona.—*Med. Times and Gaz.*, July 31, 1875, from *Union Méd.*, July 20.

31. *Treatment of a Common Cold*.—Dr. J. MILNER FOTHERGILL offers (*The Practitioner*, July, 1875) some instructive remarks on this subject. Colds he states are always “the consequences of a chill, either to the general surface or to a portion of it. Ordinarily the body temperature is maintained by the equilibrium existing betwixt the internal heat-producing area and the external heat-losing area—the surface—according to Rosenthal. When excessive heat-loss is not met by increased heat-production, a chill or lowering of the body temperature is the consequence; or if heat-production has been great, as in a ball-room, for instance, the cutaneous vessels are dilated, and if the surface be suddenly exposed to cold these dilated vessels are apt to be paralyzed instead of incited to contract, and then heat is rapidly lost from the mass of warm blood in the cutaneous vessels. The catching cold, or the escape from doing so, depends upon the state of the vessels of the surface and their capacity to contract or the opposite. Consequently we can see that catching cold or escaping it under apparently identical circumstances depends upon a condition far removed from either vision or sensation. That the *modus operandi* of catching cold under these circumstances has afforded opportunity for difference of opinion, can be no matter for surprise. Rosenthal, however, has scientifically investigated the matter and unravelled the mystery. Where heat-loss is met by heat-production at the time, no unpleasant consequences result; but when the heat-regulating processes are delayed, the loss of heat and fall of temperature at the time are followed by an excessive heat-production, constituting a pyretic condition. This in its simplest form is recognized as a cold. Usually it is accompanied by some disturbance of the respiratory tract, either in the turbinated bones, known as nasal catarrh, as sore-throat, or as an attack of bronchitis. Of course these local inflammations may become very severe, and in bronchitis life is commonly threatened. There is at this point great vascularity of the internal heat-producing area, and a dry skin, whose heat-losing power is impaired from the loss of the aid of perspiration: for Leyden found that even the insensible perspiration is lost in increasing fever.

“What are the indications furnished to us for the treatment of this state of matters? Obviously to restore the balance betwixt the two heat-producing and heat-losing areas; and in order to do so we resort to such measures as shall increase the amount of blood in the outer area, and so diminish the amount in the internal area; that is, to increase heat-loss and lessen heat-production.

“The measures ordinarily resorted to for such ends are hot fluids, a warm bed, and often a dose of opium in some form. The result of such combination is the induction of perspiration, especially if the patient lie in bed next morning and have more hot fluids: for perspiration is most successfully induced from seven to nine in the morning. If the cold be caught at once by such measures the impending pyrexia may be averted, and the temperature equilibrium be maintained. More commonly, however, the case is more advanced when seen, and the pyrexia is clearly established. Under these circumstances the treatment will be more prolonged, and restoration of the heat-balance will not be so readily attained. The condition of increased vascularity of the heat-producing area with arrested action of the skin is to be met by the administration

of agents which possess the combined properties of lowering the heart's action and relaxing the vessels of the skin; or, in other words, which relax the two muscular ends of the circulation, the central and the peripheral. The impression so made produces a diminution in the blood-current and a dilatation of the vessels of the heat-losing area. As a consequence of this there is less blood in the internal area and less heat-production, with cutaneous vascularity and increased heat-loss; rarely, however, is an impression made upon the pyrexia until the action of the skin is excited and the cooling effects of exhalation attained. The administration of nauseant diaphoretics to attain these ends has been the rule amidst practitioners and housewives. The time-honoured antimonial wine has scarcely yet yielded to its rival ipecacuan, nor, perhaps, is it desirable that it should. Their combination is good, and to be recommended. In adults, iodide of potassium in guaiac mixture forms an excellent combination especially when the cold is combined with rheumatic pains, or tonsillitis. These internal remedies may be aided in their action by external measures, such as warm baths. With children it is easy to wrap them up in a blanket wrung out of hot water, to inclose them so wrapped in a dry blanket, and put them into bed. This may be repeated as required, and sufficiently aids the remedies given by the mouth. Measures for giving adults a warm bath in bed are now to be procured at little cost. After perspiration is once induced there is usually a gradual fall of temperature; but the normal may not be reached for some days. There is a decided tendency to excessive heat-loss after the action of the skin has been established, even though the temperature indoors be above the normal. Experience has taught humanity to wrap up well when passing through a cold, especially when it is breaking. Ere the action of the skin is re-established, the impression of external cold is grateful, but afterwards chills are readily experienced. The increase of blood in the heat-losing area permits of rapid heat-loss. When a cold is caught during the restorative period, it is usually a fixed one, and not rarely serious illness is the consequence.

"When the action of the skin is re-established, it not uncommonly happens that perspiration is profuse, even while the patients are wrapped up well to shield themselves from heat-loss. This is a troublesome stage in the history of a cold. Here mineral acids with vegetable tonics are indicated, and, perhaps best of all, dilute phosphoric acid in cascarilla or cinchona. In the treatment of influenza, vegetable acids along with a bitter tonic often produce a decidedly good effect. In addition to the general effect of the tonic, the arrest of the excessive activity of the sudoriparous glands is desirable. This stage is sometimes a prolonged one, and the maintenance of a pyretic condition by the rapid loss of heat and then increased heat-production is not an uncommon event. If this condition be pronounced, the best line of treatment is that of quinia with an astringent mineral acid. Quinia is well known to possess an apyretic action, probably to some extent by its effects upon the nerve-centres, and more, according to the observations of Binz, upon its checking the ozonizing action of the blood. The effect of the astringent mineral acid upon the skin is to check secretion, and by these combined measures a satisfactory restoration to the ordinary state of health is induced.

"In the treatment of the bronchial affections which so commonly accompany an ordinary cold, it is not a matter of indifference what expectorant remedy is selected. As long as the skin is dry and the bronchial lining membrane tumid and secretion arrested, ipecacuan with acetate of ammonia is indicated; or a little antimony may be added with advantage. When the skin is once thrown into action and the bronchial secretion also established, then acids with syrup of squills are suitable measures. But it is not a successful plan to administer squill with acids until the skin is moist. When there is a tendency to the free action of the skin, this latter combination in full doses is a useful plan of treatment. Neither is the union of carbonate of ammonia and senega in severe cases indicated until the secretion alike of the skin and the bronchial lining membrane is thoroughly established.

"The treatment of a cold consists really in hastening and abbreviating the ordinary processes by which a rude disturbance of the temperature-balance of

the body is recovered from. In order to do this a fair comprehension of the natural processes must exist, so that the remedial measures may harmonize with, and not contradict these natural processes."

32. *Scarlatinal Anasarca and its Treatment*.—Dr. J. P. BRAMWELL states (*Edinburgh Medical Journal*, July, 1875) that in the last two epidemics of scarlatina which occurred in Perth, one in 1868, the other in 1874, he treated thirty-two cases of acute scarlatinal dropsy with but two deaths. "One of the fatal cases was seen too late, when no depletion could be thought of. This patient died of acute pulmonary œdema. From the severity of not a few of these cases, and the inadequacy of other means in a considerable proportion of them, there is no doubt in my mind but that several more of them would have terminated fatally had bloodletting not been boldly employed. Let me venture, then, to press this valuable old remedy in this disorder upon the notice of my professional brethren who may not have tried it, especially on the rising generation of physicians, who have been educated, perhaps, too exclusively in an expectant or building-up treatment."

The treatment adopted by Dr. B. was as follows: "When the case was one of moderate severity, and the uræmic symptoms not a conspicuous feature, sharp purgation with drastics, such as the comp. jalap. or comp. scammony powders, answers very well. It was found, however, that a very large dose was required to produce the desired effect, ʒss or even ʒij of comp. jalap being often required for a child five or six years old. This purgation was alternated by vapour-baths, and at a later period, when febrile action was diminished, inf. of digitalis with acet. of potash was administered with good results. It will be found, however that dropsical symptoms in the majority of such cases will persist in spite of all these means, and go on from bad to worse till alarming pulmonary complications show themselves, or convulsions supervene. What now is to be our line of procedure? We venture to affirm, that at this juncture abstraction of blood, either general or local—certainly general when there are convulsions—will act in a most beneficial manner, and convert in a short time an apparently hopeless case into a remediable one. In order to accomplish this, however, we must not hesitate to take blood freely, as ten ounces from the arm of a boy ten years of age, or four ounces by cupping over the loins in a child four or five years of age. Neither must we be deterred from this by the supposed anæmic condition which some writers on renal disorders have ascribed to such patients. The truth is, they are not anæmic at all, but are suffering from an acute disorder associated with a very different condition of blood from that existing in chronic renal disorders, and the rapidity with which they recover after sharp antiphlogistic treatment sufficiently shows this. Depletion acts like a charm in convulsions from acute uræmia, and we have seen a free diuresis set up in forty-eight hours after its employment, unaided by any other remedies."

33. *Pneumonia*.—Dr. THOMAS BARR, in an interesting article on this disease (*Glasgow Med. Journal*, July, 1875), based on sixty-four cases in private practice, gives the following as the treatment he adopted:—

1st. I have never employed general blood-letting, and, with the exception of the man who died from gangrene of the lung, I have never used even leeches. I think few of my readers will consider that in my cases of death the fatal result would have been prevented by depletion.

2d. I have in a few employed antimony in what might be called antiphlogistic doses. I generally used it for its expectorant and diaphoretic effects, and have very rarely used it at all with children under five years of age. I very often find patients suffering from the disease, with an irritable stomach, perspiring skin, and soft pulse. In strong adults, with very acute symptoms, and none of these contraindicating signs, I have used it in full doses with great advantage.

3d. Mercury. I have not used this medicine at all, unless as a simple aperient.

4th. Opium. I think I have seen more good done by this drug than by any

other single remedy. It gave comfort to the patient, relieving pain and allaying cough.

5th. Diaphoretics and expectorants have been given with advantage. These classes of remedies also include small doses of opium and tartar emetic.

6th. External applications. At early stages I have found most comfort from poultices of linseed meal and mustard, frequently repeated; while blisters were reserved for the more chronic stages, when the condensation of lung seemed to linger longer than usual.

With respect to the treatment of the children in whom the most of my fatal cases occurred; with the belief which I entertain of the real cause of danger, I have only adopted the restorative treatment. I have altogether eschewed bleeding, antimony, mercury. I have, of course, carefully confined the patient to a well-ventilated apartment (he requires all obtainable oxygen), with a comfortably warm temperature, given liquid diet, milk being the staple. If an infant at the breast, I limited its supply of breast-milk, and rather relieved its thirst by administration of cold barley-water; in the way of medicine, giving a diaphoretic mixture, small doses of ipecac. wine, sweet spirits of nitre, tincture of hyoscyamus, and solution of acetate of ammonia. Good has been done by allowing boiling water to evaporate near patient. Repeated linseed-meal and mustard poultices to back and front of chest have often done great good. As night approaches, the little patient often becomes very restless, annoyed by a constant hacking cough. Then I have often found the greatest benefit from a dose of Dover's powder, preferring to give one single full dose at night to small ones frequently repeated. Of course, if the case is complicated, with pent-up secretions in the air-tubes, I have avoided the Dover's powder. When the child is feeble, great benefit is derived from liniments to the chest, while beef-tea and brandy were often absolutely necessary to uphold strength till the patient passed through the crisis of the disease.

He states that "when one reads the statistics of hospital writers respecting this disease which have of late years been published, it requires not a little courage for a private practitioner to announce that he has had a mortality of one in six. But, supposing I selected my cases, and gave those only between the ages of six and fifty years, the ratio of deaths would be one in twenty-one, while of the forty-two cases between five and sixty-two, only two deaths took place."

34. *A Study of Tubercle*.—This is the title of an interesting historical and experimental thesis by Dr. DAVID FOULIS (*Glasgow Med. Journal*, July, 1875), on the nature and source of tubercle. As the result of the present state of the inquiry, he states that "tubercle is the result of a local inflammation set up in certain cells of deranged vitality by irritation, either from solid particles, or from fluids of a composition unsuited to them. For a reason not yet quite made out, the usual vascularization of the product is not gone on with, and, therefore, while a tubercle may, and often does, become absorbed, it in most instances fails to receive an adequate supply of nutriment from the blood, and undergoes disorganization. That there is any 'inherent tendency' in the tubercle to disorganize we may safely and decidedly deny."

35. *Artificial Diabetes*.—A paper was read by F. W. PAVY, M.D., at the Royal Society, on June 17, "On the Production of Glycosuria by the Effect of Oxygenated Blood on the Liver." The author referred to a former communication to the Society, on "Lesions of the Nervous System producing Diabetes" (*Proceedings of the Royal Society*, vol. x., 1859-60), in which he made known that division of certain parts of the sympathetic system occasioned the presence of sugar in the urine. The results given in that paper showed that there were other means, besides Bernard's celebrated experiment of puncturing the floor of the fourth ventricle, by which artificial diabetes could be induced, but they did not explain the reason of the appearance of the sugar, and the author still sought to discover something upon this point. The inquiry was pushed in various directions, but always with a fruitless issue until the summer of 1874. The author for some time past had been led to look to an altered condition of

the blood flowing to the liver as likely to prove the most probable cause of the transformation of amyloid substance into sugar, which evidently constitutes the foundation of the artificial diabetes following operations on the nervous system. Schiff is of this view, and (*Journal de l'Anatomie et de la Physiologie*, Paris, 1866) has referred the escape of sugar from the liver, and thence the production of glycosuria, to the development of a ferment in the blood as a result of the hyperæmia (not necessarily of the liver) which follows the operations on the nervous system which occasion artificial diabetes; but, although the author has carefully examined this opinion, he cannot obtain evidence of the development of a ferment in the manner asserted. He has further tried the effect of introducing a secretion—viz., saliva—into the circulatory system, which is known to act as an energetic ferment upon the amyloid substance of the liver; and on one occasion he found that, from some cause or other, the urine became to a moderate extent saccharine, but in a large number of other experiments the operation was attended with a negative result. Having so far proceeded without success, it occurred to the author to try the effect of introducing defibrinated arterial blood into the portal system. He was led to experiment in this way from having some time previously observed that when arterial blood only was allowed to flow through the liver—as, for instance, when the portal vein was tied and the hepatic artery left free—sugar escaped from the organ to such an extent as to render the contents of the circulatory system strongly saccharine. This result he had commented upon as being somewhat surprising, and as furnishing evidence standing in opposition to Bernard's glycogenic theory. He had not succeeded by the operation in producing glycosuria, because, as it appeared to him, no urine was secreted, owing to the ligation of the portal vein leading to such a diversion of blood from the general circulation, by the accumulation occurring in the portal system, that the flow through the kidney was too slight to allow of it. He had endeavoured to overcome this obstacle by connecting, through the medium of a canula, the portal with the right renal vein after ligaturing the corresponding renal artery. If the experiment had succeeded, the liver would have been left with its arterial supply, but the portal stream would have been diverted, and made to reach the inferior cava without traversing the hepatic vessels. As regards the operative part, this the author found he could accomplish, but each time he performed the experiment the object he had in view was frustrated by the canula becoming quickly filled with a plug of blood-clot. It was whilst under this difficulty that the thought of collecting blood from an artery, defibrinating it, and then introducing it into the portal system, occurred to him. He had considered it possible that some slight effect might be perceptible, but had not anticipated the strongly marked result which is producible. The amount of blood used has been from ten to eighteen fluidounces. After the production of anæsthesia by chloroform, the blood was collected from the carotid artery, stirred in order to defibrinate it, strained, and then very slowly injected into a branch of the mesenteric vein. In one experiment, where half an hour had been occupied in making the injection, the urine at the completion of the operation contained a notable amount of sugar, and half an hour later showed by analysis the presence of fifteen grains to the fluidounce. In a second, the urine contained ten, and in a third, fourteen grains to the fluidounce when collected three-quarters of an hour after the operation. The experiments were performed upon dogs, and in each case it had been ascertained that the urine was devoid of sugar before the operation.

Having noticed the effect which has been described from the injection of oxygenated blood into the portal system, it became necessary to ascertain positively that it was attributable to the oxygenated condition of the blood, and not to any other cause. To decide this point an appeal to the counterpart experiment was made. Defibrinated venous instead of arterial blood was injected into a branch of the mesenteric vein, and upon each occasion where such an operation has been performed a negative result has been obtained. With the evidence thus furnished, the conclusion may be warrantably drawn that oxygenated blood in some manner influences the liver, so as to lead to the production of glycosuria. It may be inferred that, contrary to the effect

of venous blood, it promotes the transformation of amyloid substance into sugar.

The suggestion naturally occurs that what has been stated above affords an explanation of the glycosuria occurring after Bernard's puncture of the fourth ventricle, and the various lesions of the sympathetic. Without any new agent being called in, sufficient is presented in the state of the blood to account for the production of sugar that occurs. By a vaso-motor paralysis affecting the vessels of the chylopoietic viscera, the blood will reach the portal system, without having become de-arterialized, in its natural way; and in this state it has been shown by the experiments narrated to possess the property of acting within the liver in such a manner as to determine the production of glycosuria.—*Med. Times and Gaz.*, July 31, 1875.

36. *Diagnosis of the Position of the Lesion in Facial Paralysis.*—Dr. W. ERB gives some extremely useful hints for determining the exact seat of the lesion of the nerve in any particular case, which we reproduce here for the benefit of our readers. His method depends on observing whether certain special branches of the facial nerve are affected or not simultaneously with those supplying the muscles of expression: 1. If the posterior auricular nerve is involved, the lesion is inside the canal of Fallopius. 2. If the sense of taste is diminished or destroyed on the corresponding side of the anterior portion of the tongue, the lesion is above the point where the chorda tympani leaves the facial nerve. 3. If the sense of hearing is abnormally acute for low notes and also for distinguishing small variations in musical tones, the nerve to the stapedius muscle, which is given off above the chorda tympani, is implicated. 4. If paralysis of the soft palate can be detected, we may conclude that the lesion involves the trunk of the facial from the geniculate ganglion onwards towards the brain. The application of these rules to a large number of cases has proved, according to Erb, that in the majority of instances of rheumatic facial paralysis the seat of the lesion is lower than the point of origin of the chorda tympani, and that in the mildest forms only that part of the nerve is affected which lies outside the canal of Fallopius; for, being thus surrounded with loose tissue, it cannot be seriously compressed by the swelling of the neurilemma.—*Med. Times and Gazette*, September 4, 1875, from *Deutsches Archiv für Klin. Medicin*, xv. s. 6.

37. *Diagnosis of Enlarged Bronchial Glands in Children.*—Dr. EUSTACE SMITH observes (*Lancet*, Aug. 14) that enlargement of the bronchial glands is a very common lesion in early life. "The seat of the enlarged glands is at the bifurcation of the trachea, and therefore behind the first bone of the sternum, and a little below it. They give rise to dulness on percussion at this spot, and the dulness often extends to each side of the bone, and also downwards to the upper part of the second bone. In the case of young children there is sometimes in health a little dulness on percussing the upper bone of the sternum, produced by the underlying thymus gland; but the dulness does not in such cases reach laterally beyond the limits of the manubrium. In the case of great enlargement of the bronchial glands there may be dulness also behind in the intrascapular region; but this is rare, on account of the thickness of lung which intervenes between the glands and the posterior wall of the thorax.

"The symptoms by which enlargement of the bronchial glands can be distinguished, viz., distension of the cervical veins, swelling of the neck, dyspnoea, spasmodic cough, and whispering voice, are all pressure signs due to the encroachment of the swollen body upon the parts around. They are, therefore, not present until the increase in size of the glands has become considerable. In these cases the dulness on percussion is usually marked, and if the glands are of sufficient size to compress the trunks of the large vessels, the ordinary stethoscopic signs of such pressure will be heard. At this stage the nature of the case is obvious; but at an earlier period, and before the enlargement has become sufficiently great to give rise to the signs enumerated above, the diagnosis of the lesion is much less easy, as the symptoms by which it is accomplished are few and obscure. At this time much assistance can be gained

from the following experiment. If the child be made to bend back the head so that his face becomes almost horizontal and the eyes look straight upwards at the ceiling above him, a venous hum, varying in intensity according to the size of the diseased glands, is heard with the stethoscope placed upon the upper bone of the sternum. As the chin is now slowly depressed, the hum becomes less loudly audible, and ceases some time before the head is brought back again into the ordinary position. The explanation of this phenomenon I believe to be that the bending backwards of the head throws forward the lower end of the trachea, which carries with it the glands lying in its bifurcation, and the left innominate vein, as it passes transversely behind the first bone of the sternum, is compressed between the enlarged glands and the bone. In cases where this sign has been present, there has often been some slight dullness over the manubrium, leading one to suspect the existence of enlargement of the glands, and the occurrence of the hum thus produced I now always consider to be evidence confirmatory of the suspicion. The experiment does not succeed in cases of flat chest, where there is no reason to suspect glandular enlargement, nor can the hum be produced by the thymus gland in a healthy child. This gland lies immediately behind the sternum in front of the great vessels; enlarged bronchial glands lie behind the vessels in the bifurcation of the trachea. A swelling in front of the vessels does not appear to set up pressure upon the vein when the head is bent back in the position described. I have examined many children, with a view to test this point, and in no case have I found the characteristic hum produced except in cases where there was reason, from other symptoms, to suspect the presence of bronchial glandular enlargement."

38. *Recovery from Intussusception after the Separation and Voidance of Four Inches of Small Intestine.*—Dr. RINTELN, of Oeynhausen, reports the following interesting case under the heading of "Gleanings from Practice," in the *Berliner Klinische Wochenschrift* for May 24, 1875. The patient, a delicate and spare woman, aged sixty, actually lived ten years after her recovery, and enjoyed fair health. The attack was preceded by diarrhœa and colicky pains. Then came symptoms of obstruction of the bowels, and vomiting of fecal matters, some of which were in lumps, which leads Dr. Rinteln to infer that they were formed in the small intestine. After ten days rather active medication, under which she grew worse, resort was had to opiates, and absolute rest to the bowels. At the end of three weeks her life was despaired of. On the twenty-fifth day, however, she greatly improved. On the preceding night there were five or six feculent stools, mixed at first with blood and mucus. In one of these about four inches of dark gangrenous small intestine were found. From this time her recovery was rapid, and it must have been complete, since she never afterwards had the least difficulty in passing motions. [Similar cases in younger subjects have several times been noted. By the courtesy of Mr. Hutchinson, the reporter saw one such in the practice of Dr. Stutter, of Sydenham, in which a boy passed nearly a foot of small intestine, and recovered. Rinteln's case is, however, interesting on account of the patient's age.]—*Lond. Med. Rec.*, July 15, 1875.]

SURGICAL PATHOLOGY AND THERAPEUTICS. AND OPERATIVE SURGERY.

39. *Treatment of Wounds and Surgical Dressings.*—Prof. SPENCE remarks, in his recent Address in Surgery, that "the truly philosophical views of the adhesive process, taught by John Hunter, gradually led to clearer notions as to the requirements of wounds, and the principles on which their treatment should be conducted; and nowhere were these views more fully and intelligently carried out in practice than in this city [Edinburgh], mainly through the influence of the

writings of John Bell, and subsequently by the treatises of Liston and Syme on the treatment of incised wounds. The principles laid down were simple; thorough cleansing of the cut surfaces, waiting until all oozing had ceased and the surfaces glazed with lymph, before uniting them finally by sutures; cold applied for some hours to moderate excited action, then light dry dressing, and no interference with the wound except what was required to keep it clean. But, at the same time, great attention was paid to the general state of the patient. The results obtained were excellent, and, until recently, this has been the system in use here. But simplicity has sources of failure, for it is apt to lead to carelessness in dressing. We are again in a transition state in regard to the treatment of wounds. The antiseptic method (as it is termed) of my esteemed colleague, Professor Lister, is being pressed in some quarters to the exclusion of conditions which I think at least equally, if not more, important in the treatment of wounds and operations. This is not the place, nor is there time, to discuss the theory as to production of putrescence by germs from without, or whether that condition may not also arise from within owing to certain states of the blood and general system; nor yet as to the comparative value of the different antiseptics at present contending for pre-eminence. But some of the statements advanced in favour of the antiseptic system so ignore the success obtained by simple dressing and treatment of wounds, or assert such an amount of infallibility as to the curative powers of the special method, as to require notice. When I read statements to the effect, 'that the antiseptic method is to be regarded as one of the most important contributions to modern practice, inasmuch as it makes wounds heal by first intention, instead of going through the painful process of granulation and suppuration,' I can only regard such statements as arising from want of experience in, or misrepresentation of, the simple method of treating wounds; for, assuredly healing by granulation is neither the object nor yet the general result of that treatment. Suppuration, I believe, is not unknown under the antiseptic method, whilst the average duration of treatment is certainly not lessened. But when I find a German professor and hospital surgeon stating that, after a year and a half's experience of the antiseptic treatment, he is able to guarantee with certainty a perfectly successful result to his operations, such assertion challenges closer examination, demands proof, and forces me to ask the question, How far, apart from other conditions, do different modes of dressing stand in the relation of cause to successful results? The answer to this important question must rest on sufficient data and carefully weighed statistics. It will not suffice to point to some brilliant results in individual cases, because all methods of treatment can produce that kind of proof; nor will it do to state that no deaths from pyæmia have occurred under the system. At one time that term was never met with in the bills of mortality, and it is rapidly disappearing now. The statistics for proof must indicate the nature of the disease or injury for which the operation was performed, and the cause of death in fatal cases (for deaths still occur), not by a conventional term, but by giving the symptoms during life, and the organic lesions found after death.

"With extensive statistics of this kind, we would be better able to judge of the comparative advantages of different systems of treatment. At present all is assertion or reference to special cases, or to the not very definite statistics of foreign hospitals, and it is not a little curious that we hear most of the success from abroad. I think sufficient time and scope have been given to the antiseptic system in this country to enable those who use it to furnish statistics such as I have indicated, and thus to enable us to judge more dispassionately of its real merit. In comparing of late the results of my own hospital practice, I have been struck with the success which attended very simple treatment, and this leads me to question our progress in departing from such treatment for more complicated methods. Thus I find that, during a period of three years, out of sixty-three major amputations for disease, there were only three deaths; and of twenty-three cases of excision of joints, only two deaths, at a time when the treatment consisted in thoroughly cleansing the cut surface by pouring tepid water over it, and occasionally applying tincture of iodine alone, or diluted, on the flaps; whilst the dressing consisted merely

in laying a veil of lint or thin muslin over the stump. Again, when preparing statistics of my amputations for my published lectures, I found evidence that certain conditions, such as the nature of the disease or injury necessitating the operation, had most important influence on the result; such influence, indeed, as I could not have supposed until the statistics brought it distinctly before me, and my later statistics corroborate my former; so that I cannot accept the statement that any method of dressing, however good, will ever enable us to guarantee success. Whilst I speak of the antiseptic system, meaning the special method, I need hardly say that all surgeons have for their object the avoidance of putrescence, though their views may differ as to the best way of attaining their object.

"I cannot close without recommending to notice the advantages obtained in treating lacerated wounds and burns of the extremities by continuous immersion in the tepid bath. The avoidance of all meddling with the injured part, and of the agony of the patient caused by changing dressings, is thereby so completely attained, that the method requires only to be fairly tried to show its advantages. In the case of burns these advantages are most conspicuous, for the constant moisture keeps the cicatricial tissue pliable, and motion of the parts can be effected gradually, whilst the limb is immersed in the bath. The water may be rendered antiseptic by carbolic or boracic acid should that be considered desirable."—*British Med. Journ.*, Aug. 14, 1875.

40. *Healing of Wounds by Blood-tissue*.—Mr. JOHN CHIENE, Assistant Surgeon, Edinburgh Royal Infirmary, states (*Lancet*, July 10th, 1875) that the organization of an accidental blood-clot in open antiseptic wounds in Mr. Lister's practice and in cases under his own care, first suggested to his mind the propriety of trying to heal a recent open wound by filling, at the time of the operation, the cavity with blood, which would coagulate, become organized, and which in time would become covered with epithelium. The expectation was that less contraction would follow if the wound healed by blood-tissue than if it was allowed to granulate and heal by cicatrization.

Mr. Chiene has tried this plan in one case in which there was promise of a favourable result, but the practical value of the method has yet to be tested by further experiment.

41. *Chloral as a Surgical Dressing*.—Prof. MARC SÉE, of the St. Eugénie, advances some remarkable evidence in favour of the great value of chloral as a dressing, employed in the proportion of 1 per cent. in water. He first employed it in a case of diphtheritis of the vulva, and the success was so great that he has since used it in numbers of cases during nearly a year, without ever being disappointed. He has applied it in wounds of bad aspect, disinclined to cicatrize, in contused wounds accompanied by much detachment of soft parts, and actual or threatened mortification, or abundant suppuration. He has injected it into the centres of abscesses and sinuses connected with bone, and has also used it in dressing simple wounds, whether accidental or surgical. In all these cases the result was most satisfactory, without any accident whatever calling for the suspension of the chloral occurring. In patients whose wounds on their entrance were complicated with erysipelas or diffused phlegmon, two or three days' use of the chloral has sufficed to arrest the progress of such complications. After cleansing the wound and its vicinity by means of a little charpie (avoiding the use of sponges) dipped in the solution (and when the wound is deep and irregular, filling it with this, so that it may gain access to the most remote corners) he covers the whole surface with pledgets of charpie thoroughly imbibed with the chloral, and having covered these with oiled silk, envelops the whole in a thick layer of wadding, and applies a roller somewhat tightly. The chloral is pleasant to the smell, soils neither the fingers nor the bedding, is not too volatile, and causes no pain on application. It has been of great service in several cases of ozaena without necrosis, and it would be difficult to mention all the applications of which it is susceptible. Whenever fetidity has to be destroyed, fermentation, putrefaction, or the production of vibrios, etc., to be arrested, it fulfils the indication with certainty and inoffen-

siveness. Its moderate price, also, is a matter of importance in hospital administration, as a kilogramme is to be had for twelve or fifteen francs; and as a litre at 1 per cent. contains ten grammes, the price of which is from twelve to fifteen centimes, next to water itself it is the cheapest article that can be employed.

At a recent meeting of the Société de Thérapentique (*Bullet. de Thérap.*, July 30), M. CRÉQUY strongly recommended chloral as an injection in ozena, in the proportion of two parts to 250 of water. He places a caoutchouc tube in the vessel containing the solution, and, raising this above the patient's head, allows the fluid to pass into the nose by siphon action. Several members of the Society testified to the utility of the solution as an application in scrofulous and fetid ulcers, in the eschars produced by decubitus, etc.—*Med. Times and Gaz.*, Aug. 21, 1875, from *Journ. de Thérap.*, July 25, 1875.

42. *Ligature of a Main Artery to arrest Inflammation*.—Mr. C. F. MAUNDER, in one of his Lettsomian lectures on the surgery of the arteries, gives the following facts and conclusions regarding the ligature of a main artery to arrest inflammation.

"That ligature of the superficial femoral artery has arrested acute inflammation consequent on wound of the knee-joint.

"That ligature of a main artery will quickly diminish profuse suppuration, and prevent death by exhaustion.

"That, while it arrests profuse suppuration, it will, by allowing the patient to gain strength, afford an opportunity for amputation at a future time.

"That gangrene and secondary hemorrhage, as the result of ligature, should not be anticipated in the healthy subject.

"That the dread of these has arisen from our knowledge of the consequences of the ligature in instances of known diseased vessels—aneurism, for example.

"That a slough on the heel, caused by the pressure of a splint, was quickly detached, and the wound soon closed, although the superficial femoral had been tied a few days previously.

"That symptoms of inflamed bone, "starting pains," quickly disappeared.

"That the arterial tension of the rest of the body will be increased beneficially by the ligature.

"Such, Mr. President, are the conclusions at which I have arrived from a review of the above subject; but, seeing that this operation was originated in America long before I was born, while I thought it had been first suggested by me in 1866, I may well say 'there is nothing new under the sun.'"—*Lancet*, July 10, 1875.

43. *Two Cases of Aneurism, one of the Carotid and one of the Femoral Artery, treated by Wire Compress, both successful*.—Mr. J. DIX, of Hull, communicated these cases to the Surgical Section of the British Medical Association. His operation is as follows: The artery is cut down on, and the wire is drawn under the artery by the aneurism-needle in the usual way. Each end of the wire is then attached to a needle, and so brought out through the tissues by the side of, but clear of the wound, so that the ends are about half an inch from each other. A piece of cork is placed between the points of exit of the wire, and pressed firmly down in the course of the artery; and over this the wire is tightly twisted till the circulation is stopped. In each of the cases related, a feeble current of blood was admitted into the sac for three days, and only on the fourth day was it entirely cut off. In twenty-four hours afterwards, consolidation of the aneurism had taken place. The wire is removable at any time, and in these cases was removed on the sixth and seventh days. This the author considered one of the greatest advantages of his method, as it allows the gradual establishment of the collateral circulation, and greatly diminishes the risk of gangrene, if not removing it altogether. It does not cut the inner coats of the artery, nor cause ulceration of its outer coat; its blood-channel is intact, and hemorrhage cannot possibly occur. Bleeding (the greatest danger from ligature) is entirely abolished; and gangrene, the next most fatal risk, is much diminished. The wire compress has other advantages over the

ligature. Thus it is not a foreign body in the wound, and therefore does not excite suppuration and impede breathing. It is applicable to all arteries alike.—Dr. PIRRIE (Aberdeen) said that a great deal had been brought forward on acupressure. Since 1854, he had used no other method of arresting hemorrhage in any operation, unless in those on the tongue, upper jaw, and deep tumours of neck. His belief in it was unshaken; and acupressure, defined as “metallic compression, removable at pleasure,” he believed to be one of the greatest improvements in modern surgery. In regard to its use in aneurism, there was no time to discuss it, although he would have been most happy to do so.—*British Medical Journal*, Aug. 28, 1875.

44 *Concluding Report of a Case of Innominate Aneurism, treated by Ligature of the Left Common Carotid and Subclavian.*—Our readers will remember the report of this case, which appeared in our number for April last, page 555. As the case may be considered one of some surgical interest, and an example of a mode of treatment as yet on its trial, we publish the ultimate result of the case as reported in the *Lancet* for July 31, 1875.

The operation was performed on September 8th, and up to date of last report the man was going on favourably. The subclavian wound had firmly healed, and there was but a little stain of discharge from a granulating spot in the line of the carotid incision. The patient had little or no pain, the impulse was less, the bruit was less marked, and there was very trifling impediment to his deglutition, and he was allowed to go about the ward.

On October 24th he very imprudently went out of his room with simply his night-dress on, remaining some half an hour out of his bed in the cold. The next morning he was taken with shivering, and had rheumatic-like pains generally. The pulse rose to 95, the impulse became very marked above the clavicle, and a little bleeding came on from the lowest part of the carotid wound. Ordered a mixture of carbonate of ammonia, chlorate of potash, and tincture of aconite, half a minim, every four hours.

October 25. Pulse 88.

26th. Pulse 80; impulse less. No pain.

27th. Pulse 80.

28th. Pulse 76. To take the mixture at eleven, four, and nine o'clock.

29th. Pulse 76. Mixture at eleven and nine o'clock.

30th. Pulse 75. Bowels too relaxed. To take two minims of tincture of aconite, twenty-five minims of chlorodyne, and one ounce of infusion of gentian, twice a day.

31st. Pulse 92. Cough very troublesome last night, and after a paroxysm free hemorrhage came on from carotid wound at 9 P. M. Applied lint soaked in tincture of iron, and strapping, and gave a dose of solution of morphia. This morning lies in a sleepy state. No more hemorrhage; tumour pulsating forcibly; marked œdema of left hand; some œdema of feet.

November 1. Pulse 95. Hemorrhage again last night after a bad fit of coughing.

2d. Pulse 96. No hemorrhage.

3d. Pulse 96. Coughs up a tenacious mucus.

4th. Pulse 88; impulse feeble.

5th. Pulse 86. Hemorrhage at 5 o'clock this morning.

7th. Pulse feeble. No particular pain in the chest. Has had a little œdema of right eyelid for the last two or three days, and to-day the cornea looks cloudy, and is apparently perishing.

9th. Cornea has given way; vitreous and lens escaped; eye collapsed. Face a little drawn to left; swallows without much difficulty.

10th. Hemorrhage again at 8.30 when in the act of smoking; arrested by the same means as before. Has no difficulty of breathing if he turns his head to the right, but it comes on if he turns it to the left.

11th. Pulse weak and intermitting; complains of no pain, but, putting his hands together, says “his breath is like that.”

12th. Died comatose at 10 o'clock this morning.

Necropsy, six hours after death.—Body thin, but not emaciated. Base of

neck above the collar-bones bulging, a plug of coagulum presenting at lower part of carotid wound. In removing the sternum and sternal end of clavicle careful dissection was needed to avoid tearing the parts immediately beneath. The ascending aorta was generally dilated, and arising from it was a semi-solid tumour, formed by the arteria innominata, the size of a small orange. Pericardium filled with fluid. Upper part of right lung, symptoms of recent pleurisy. The right subclavian artery was obliterated, and adherent at ligatured part to the first rib. The aneurism had given way just below the ligature of the carotid; the pneumogastric nerve was flattened out on the aneurism. Adhesion of descending aorta to spine, tearing at one point, where a distinct little aneurism, size of a walnut, had corroded the bodies of the tenth and eleventh vertebræ. Lungs were adherent in parts from recent pleurisy, and filled with frothy mucus, but not consolidated. Dura mater adherent in several parts to hemispheres; pia mater opalescent, and evidences of chronic irritation as seen in hard drinkers; excess of fluid at base of brain. Brain-substance pale and soft. The "posterior communicans" artery on right side obliterated, or rather reduced to a fine fibrous thread. Liver very contracted, with marks of old inflammation on its capsule.

The man survived the operation sixty-five days. Mr. Ensor thinks that, had it not been for his imprudence in exposing himself to the cold night air and setting up the acute attack of pleurisy, he would have survived longer; the paroxysm of cough put more strain on the circulation than the weakened artery could bear. But that he would have lived much longer is very improbable, as there was a spot on the posterior aspect of the aneurism which was as thin as a kid glove, and which would have soon given way. Mr. Ensor thinks the man's life was prolonged by the operation—a questionable benefit. He has no doubt he was spared much suffering, both by the operation and by the use of aconite; for had it been left to nature, the tension and erosion of unyielding tissues would have caused constant severe pain, whereas from the time of the ligature of the arteries the pain was diminished in a marked degree; and the end was certainly a euthanasia in comparison with that which I have seen in other cases of aneurism.

In a younger subject, and with as distinct a diagnosis of innominate aneurism, Mr. Ensor should not refuse a similar operation; but the diagnosis as to whether the arterial change is limited to the innominate is difficult—that it should be so limited is improbable.

As far as his experience goes, Mr. Ensor believes that chronic alcoholism and syphilis are the two most important causes in bringing about that condition of artery which results in aneurism.

45. *Malposition of the Aorta, due to Rickets, simulating Aneurism.*—The *Edinburgh Med. Journ.*, July, 1875, contains an interesting lecture by Dr. GEORGE W. BALFOUR on this subject with an account of three cases in which rickety distortion of the skeleton gave rise to abnormal conditions of the blood-vessels closely resembling aneurism. "It is well," he remarks, "to be aware of, and prepared for, the occurrence of such cases, and thus avoid falling into mistakes, which, in any case similar to that I have just referred to, might be fraught with very serious results to one or other, possibly to both, of the parties concerned."

"You will, therefore, remember that even a fluid pulsation in any of the intercostal spaces is not necessarily an aneurism. That the absence of any history of empyema, or even the distinct connection of the pulsation with the aorta by continuity of dulness, is no proof of its being aneurismal in character, either in the sense of a sacculated aneurism, or of its being a simple dilatation. Because, even in the normal condition of the skeleton, the aorta may exceptionally be so deflected as to cause its pulsations to become perceptible in one or other of the intercostal spaces; while this occurrence of abnormal intercostal pulsation of simple arterial origin is a matter of no unfrequent occurrence whenever the thoracic skeleton is deformed by rickets; while we must also never forget that, even in chests deformed by rickets, sacculated aortic aneurisms may occur."

"Where there is no twisting or bending of the artery, and no aortic regurgitation, the first case narrated would seem to show that—as we would naturally

expect—there is no murmur to be heard over the abnormal pulsation, and that the only sounds audible are those ordinarily heard at the base of the heart, the second, in particular, not being in any degree accentuated. Whenever, however, we have a murmur of regurgitation developed at the base of the heart, that of course is always more or less audible over the course of the ascending and transverse portions of the aorta; and apart from any constriction at the mouth of the aorta, we are sure to have a systolic murmur developed over any part of that artery wherever any sharp twist or bend occurs. Moreover, as any abnormal intercostal pulsation of the aorta must be nearer the surface than any normally situated part of that artery, all sounds in its course are liable to be heard louder over that pulsation than elsewhere, yet without accentuation. But whenever over any abnormal pulsation we have marked accentuation of any abnormal, but especially of the normal, particularly the second cardiac sound, we must be suspicious of the occurrence of a sacculated aneurism, and that even though rickety malformation of the chest be present. To make our diagnosis certain, however, we must be able, not only to connect the pulsation directly with the aorta, but to show also that the dullness subtended by that pulsating body occupies a space greater than would be the case were the pulsation due to a simple cylindrical vessel such as the aorta. Extension of dullness, therefore, beyond the pulsating tumour, associated with the signs and symptoms of pressure upon one or other, or upon several of the neighbouring organs, are among the most certain indications of the existence of a sacculated, or even of a cirroid, aneurism. And from these signs and symptoms of pressure, associated with certain other phenomena which indicate the dependence of that pressure upon an elastic and distensible body of varying dimensions, we are often able to prognosticate the existence of an aneurism, even when no pulsating tumour has been detected; and, of course, we are in a still more favourable position for determining the existence of an aneurism when a pulsating tumour is perceptible."

46. *Resection of Two-thirds of the Right Humerus; Complete Reproduction of Bone.*—Dr. RICORDI relates the following case: A boy, æt. 12, presenting some amount of rickety deformity, was admitted into the hospital at Milan with fracture of the arm, in consequence of a fall from a tree. The external part of the elbow had come into contact with the ground; and a portion of bone protruded from the fracture, which was reduced by the district surgeon.

On removing the dressings, Dr. Ricordi found a fracture of the humerus a little above the condyles, and a lacerated wound about two inches long at the outer side of the lower part of the arm, from which a little blood escaped. On making the upper end of the bone project, it was seen that there was a V-shaped fracture, and that there was a longitudinal fissure about 1.2 inch long in the bone, which was extensively denuded of periosteum. By drawing the forearm toward the chest and raising it, Dr. Ricordi exposed the bone more completely, and, on enlarging the wound upwards, he found that the periosteum was stripped off for a space of four inches. He decided on removing the denuded bone; and with a chain-saw divided it about two inches from the head of the humerus, and trimmed the lower end of the bone with bone-forceps. The portion removed from the upper part measured four inches; that from the lower about 0.4 inch. Three points of suture were applied to the wound; the arm was encased in a card-board splint with an opening opposite the wound, and the forearm was placed in a sling. There was but slight reaction, and the cure was complete on the fortieth day. During this period the bone was completely reproduced, without any shortening.

This case is remarkable on account of the extensive separation of the periosteum. The boy struck the ground with the outer side of the elbow, and the humerus was broken at the lower third: the force of the fall then being continued, the upper fragment of bone burst through the soft parts and protruded. The effect of the fall, however, was not arrested here; the periosteum, adhering more to the neighbouring parts than to the bone, was separated for some distance. And the case is interesting on account of the amount of bone removed, and of the rapidity with which recovery took place. This, however,

does not cause surprise when we consider that the periosteum only suffered a longitudinal fissure, preserving its vascularity, and retaining its adhesion to the neighbouring parts, thus presenting the most favourable conditions for rapid and regular formation of new bone.—*London Med. Record*, August 16, from *Bulletino delle Scienze Mediche di Bologna*, May, 1875.

47. *Grafting of the Extensor Tendons of the Hands; Anastomosis of the Tendons*.—Dr. GILLETTE relates, in *L'Union Médicale*, February 13, 1875, the following very interesting case, which occurred under the care of M. Tillaux. A man received a wound on the back of his hand, by which the two extensor tendons of the fourth and fifth fingers were divided, and those fingers lost all extensor power and were permanently flexed. The blood having been excluded by Esmarch's bandage, two flaps were turned back, so as to expose the peripheral ends of the divided tendons, and these were then implanted or grafted into the uninjured tendon of the middle finger. This was done by making a sort of button-hole in the tendon (or in its sheath?) into which the two divided tendons were implanted by means of several points of metal suture. The operation was performed without anæsthetics, and the tendons (which were completely free from any trace of inflammation) presented evidences of lively sensibility.

The wound cicatrized kindly, and the man recovered the motion of both fingers.

48. *Amputations in Scrofulous Subjects*.—A case related at a recent meeting of the Société de Chirurgie (*Gazette des Hôpitaux*, June 19), in which a scrofulous child exhibited remarkable resistance to several successive operations, led M. VERNEUIL to protest against the illusions that exist as to the innocuity of operations in scrofulous subjects, and especially operations performed on bones. As long back as 1845 he had been struck by examining in the hospitals the results of the partial extirpations of the bones of the hands and feet in scrofulous subjects. The immediate results are very favourable, erysipelas being very mild in these subjects, and pyæmia rare; and few are lost by acute traumatic accidents. The wounds are very fine, granulating abundantly—indeed, too abundantly; but the cicatrization is defective. When the patient attempts to use his limb, the disease reappears, either at the same spot, in other joints, or in some of the viscera. The amputation wound heals up, but the patient dies with albuminuria, general œdema, fatty degeneration of the liver, or tubercle. An English author, who is a good observer, recommends that operations should be performed early in scrofulous subjects, before the development of morbid manifestations in the liver or kidney, and that in them amputations, not excisions, should be resorted to. M. Marjolin partakes of M. Verneuil's scruples relative to the performance of operations in scrofulous children. Having been in charge of a children's hospital service for eighteen years, he has been able to follow the patients during long periods, as they re-entered the wards on several occasions. Inclined, as he was at first, to operate early, experience has taught him that these operations are premature before the constitutions of these little subjects have undergone modification, until when they should always be rejected, unless great urgency exists, which is rare. He has often seen infants, who had been operated upon and cured, re-enter and die of meningitis, pulmonary tubercle, or intestinal lesions.—*Med. Times and Gaz.*, July 10, 1875.

49. *Supra-Condylloid Amputation of the Thigh*.—Dr. WM. STOKES, in an instructive paper (*Dublin Journal of Medical Science*, August, 1875), advocates the supra-condylloid amputation of the thigh as possessing advantages over the knee amputations of Velpeau, Syme, Gritti, and Carden, and also over the operation of excision of the knee-joint, being attended with far less risk to the patient than that procedure.

He relates two cases in which he performed the operation with satisfactory results.

The advantages which he claims for supra-condylloid "amputation are those

which it has," he states, "in common with other amputations at the knee and those which are peculiar to itself. Among the former I may mention:—

"1. The stump being more useful for progression in consequence of the possibility of making pressure on its extremity, and the patient not being obliged to walk as if he had an ankylosed hip-joint, as is always the case when the point of support is at the pelvis. As Dr. Markoe says: 'To the poor man this single circumstance makes all the difference, between his being able to earn his living by active employment and his being laid up for life a hopeless cripple. To the rich man who is able to secure the aid of an artificial limb, it makes the difference between a point of support at the knee and a point of support at the ischium. In fact, it is practically the difference between amputation below and amputation above the knee.'

"2. The diminished liability to the formation of tubular sequestra.

"3. The operation is less hazardous, being further removed from the trunk than the ordinary amputations of the thigh.

"4. The shock is less than in the higher amputations, as the muscles which are divided are few in number, and being cut, not through their fleshy bellies, but at their tendinous extremities.

"5. Less liability to suppuration.

"6. Less liability to osteo-myelitis, from the medullary membrane not being interfered with.

"The special advantages of supra-condyloid amputation are—

"1. That the posterior surface of the anterior flap is bound with a natural synovial lining, which I feel confident largely diminishes the chances not only of subsequent exhaustive suppuration, but also of purulent absorption.

"2. Any possibility of the split patella shifting from its place on the cut surface of the femur is prevented by the high femoral section, and by stitching the two bones together in the manner I have described.

"3. The existence of an osseous curtain, which is formed by the split patella covering the cut surface of the femur, diminishes probably the chances of pyæmia, and is not liable to slough away as the periosteal curtain, as recommended by Von Langenbeck, undoubtedly is.

"4. The vessels are divided at right angles to their continuity, and not obliquely, as they are in other flap operations.

"5. The existence of a posterior flap diminishes the chances of any wide gaping of the wound posteriorly, while the anterior flap, being oval, increases the chances of the stump tapering gradually towards its extremity and assuming the form of a rounded cone.

"6. The preservation of the normal attachments of the extensors of the leg.

"To Professor Velpeau is due the credit of first recommending the preservation of the patella in amputations at the knee-joint, and this recommendation was adopted subsequently by Lane, Blenkins, and Markoe. To Gritti is due the credit of drawing attention to the fact of the great advantage that is derived from having the patella fixed, in order that there should be a firm standpoint on which the extensors may act. The operation, however, as practised by him, was in many respects a defective procedure, was attended, as Prof. Rizzoli informs us, with a high rate of mortality, and consequently soon fell into disrepute.

"In supra-condyloid amputation, which is the outcome of the procedures I have alluded to—notably those of Velpeau, Syme, Carden, Gritti, and Rizzoli—I have retained the advantages observable in these operations, and eliminated what experience has shown to be defective in them, and the results obtained in my hands, and in those of my colleague, Professor Macnamara, and the other eminent surgeons who have performed the operation, lead me to the conviction that it must be conceded that, in supra-condyloid amputation, a signal advance has been made in operative surgery."

In addition to other advantages Dr. S. asserts that it is the operation of its kind which is attended with the minimum of risk to the patient's life.

50. *Treatment of Fractures of the Lower Extremity by Weight and Pulley.*
—Prof. SPENCE, of Edinburgh, in his admirable address on Surgery, at the

recent meeting of the British Medical Association, remarked: "Looking at some of the more prominent recent changes in surgical practice, a superficial observer might almost imagine that instead of progressing, our science moved in a cycle; and were he inclined to be cynical, he might suggest that we had revolved back to the period of sheer mechanical forces, complicated dressings, and red-hot knives. A nearer and more appreciative examination will show us, however, that even in cases where the principle is not new, the method of applying it has been so modified and improved as to constitute a real advance and addition to our resources. Let me take as an example of this, a method of treating fractures of the lower extremity now much used—*extension by weight and pulley*. . . .

"Mr. John Bell, in his great work on *Surgery*, speaking of the machines used in treating fractures, says: 'I may, perhaps, do you some service by explaining the simple principles of this department of surgery; and then you will be able to enter the magazines of Scultetus, Hildanus, and Pareus, filled with engines not unworthy the chambers of the Inquisition, without being tempted to bring out along with you any of their lumber.' Accordingly, he does enter the magazines of apparatus, and criticizes them with his usual scathing sarcasm. Amongst other 'lumber,' he unhangs from the walls of the magazine of Hildanus a weight with circle and strap for hanging from the ankle, and drags to light a bed with a surcingle or perineal band of horse-girth for fixing the body to the upper part of the bed; and on this rude apparatus for permanent extension he makes ironically laudatory remarks. Mr. Bell would have been better employed if, when he exhibited the rude apparatus of Hildanus, and admitted its power of maintaining permanent extension, he had thoughtfully considered how its defects might be removed, and it might be converted into a simple and effective means of treating fractures of the lower extremity. Let me again take the dust off this bed and weight of Hildanus, and place them alongside some modern surgical upholstery, and see how like they are. Here is the weight and pulley method copied from a recent work on surgery. How very like! The perineal band or surcingle fixing the patient; the weight hanging from the foot through the pulley fixed at the foot of the bed. But how is the weight hung from the limb? No longer by a circular strap around the ankle, acting on one part only, and so unendurable, but to long plasters fixed to and embracing a great breadth of the limb from immediately below the fracture, and so diffusing pressure that the patient feels no inconvenience, and is scarcely sensible of the extending force. That makes the difference. But something is still wanting to its perfection. Can we get rid of that perineal band, which proves so troublesome to patient, and surgeon, and nurse? How can we dispense with it, and maintain a counteracting force to the extension from the foot? Tilt up the lower end of the bed; place blocks of wood below the feet of the bed; take off the perineal band, and let the body be the counter-extending force; and there you have the simplest, least irksome, and most perfect method I know of treating fractures of the thigh, and, if possible, still more useful in treating oblique fractures of the tibia. . . .

"Now, after some years' experience in the use of the extension-pulleys in fractures of the thigh in very young children and in adults, in fracture of the neck of the femur in old persons, and in long oblique fractures of the tibia, I unhesitatingly commend the method to all who may not have tried it. Of course, in fractures of the shaft of the femur, lateral splints are required, just as when we use the long splint, and also for lateral support in fractures of the leg. When there is much bruising, however, I merely use sand-bags to prevent lateral displacement; and I also prefer deep sand-bags, to prevent rolling of the limb outwards in fractures of the thigh, to a long lateral splint, as used in America. In fact, the full advantages of the extension-pulley method are only secured when we abandon the perineal *lacque* and long lateral splint, and make the body the counter-extending force.

"Looking at the extension method, as thus improved and simplified, I think we may fairly reckon it as progress in a most important department of surgery; but, whilst we congratulate ourselves on our advance, and replace the bed and weight of Hildanus in the *armamentarium antiquorum*, let us regard

it not as 'lumber,' but reverently with the homage due to the perception of a true principle, however rude in design and execution the apparatus may be."—*British Med. Journ.*, Aug. 14, 1875.

51. *Manual Method of Reducing Dislocations of the Hip*.—Prof. SPENCE, in his Address in Surgery before the British Medical Association, makes the following interesting remarks on this subject:—

"The manual method of reducing dislocations of the hip has been revived and used with great success; so much so, that the reduction of these luxations, which formerly entailed much trouble and the expenditure of great force, can now be effected in recent cases as if by magic. I have said that the use of the rotatory or circumduction method has been revived; perhaps I should rather have said revived as a general practice, for, in truth, it has never really been altogether abandoned. We generally hear it spoken of as the American method, and undoubtedly it is to the writings of Drs. Reid and Bigelow, of the United States, that we owe the more general use of the practice in this country; but it is not a little curious that it has been so little known or used, seeing that it is mentioned and described in some of the principal French works on surgery—not old black letter, but modern books, in the possession of most of us. Thus in Nélaton's *Pathologie Chirurgicale*, published in 1847-48, there is the following statement in reference to the dislocations of the hip: 'In 1835, M. Deprès made known a method which cannot be too highly recommended on account of its simplicity and the real services which it has rendered in certain difficult cases. . . . This method consists in flexing the leg on the thigh, the thigh on the pelvis, to exaggerate even the movement of flexion and abduction of the limb, then to exercise with it a gentle movement of rotation outwards, whilst at the same time it is abducted.' This method, says Nélaton, is described by Pouteau in his *Mélanges de Chirurgie*. M. Chassaignac, in the second volume of his *Opérations Chirurgicales*, 1862, speaks of this method of reducing dislocations of the hip, and quotes the text of Pouteau as follows: 'Surgeon-Major Maison-Neuve, of the Regiment of Maugiron, a man of great merit, and trustworthy, assures me that he has reduced such luxations without the assistance of any extension. He first flexes the thigh at a right angle with the body; he then executes with the thigh a movement of rotation, which makes it approach the belly as nearly as possible, then carries it out towards the haunch, and returns it immediately by drawing it down towards the sound thigh.' Pouteau adds that this method was known to the ancients, and that it is mentioned by Hippocrates and Paulus Ægineta. The diagram to which I point is an enlarged copy of an illustration from a French work on Bandaging and Surgical Appliances, by Dr. Goffrés, published at Paris in 1859, and shows the surgeon in the act of using the manual method of Deprès. For this I am indebted to my friend Dr. Paterson, formerly of Bahia. M. Chassaignac enters very fully on the principle of the method; and there is a curious sort of coincidence in terms between his use of the letter Y, to assist his description, and the use made of the same letter by Dr. Bigelow, to mean a totally different thing. Dr. Bigelow speaks of the Y ligament as playing an important part in the rotary method, describing the ilio-femoral ligament under that name, on account of the divergence of its fibres at their attachment to the femur. Chassaignac describes the leg and thigh, when bent, as representing a pair of compasses opened at a right angle, the lower or horizontal branch represented by the leg, the upper or perpendicular branch by the thigh—this latter divided at its upper extremity into two parts, like the letter Y, one part being fixed, represented by the ilio-femoral ligament, the other movable, represented by the head and neck of the femur; and then he proceeds to demonstrate how, by using the leg as the arm of a bent lever, whilst the ligament, being fixed, forms a pivot, the movable part—the head of the femur—is forced or directed to the acetabulum. Here we have an example of advance by the attention of the profession being directed to a method which had been practised from an early period, and which has never been altogether obsolete."—*British Med. Journ.*, Aug. 14, 1875.

52. *Reduction of Dislocation of the Shoulder.*—M. REVILLOUT gives an account of the mode which M. PANAS adopts for the easy accomplishment of this. M. Panas believes that almost all these dislocations are produced by a rotation of the humerus; and as the result of numerous experiments he found that it is very easy to lacerate by a movement of rotation a capsular ligament which would resist a direct traction of 600 kilogrammes. Generally, also, the tendon of the subscapularis is ruptured in the dislocation forwards. For the easy reduction of this dislocation it is of importance to keep the arm rotated outwards. For, in fact, once beyond the button-hole laceration of the capsule, the head of the bone, when carried inwards, lies supported on the inner lip of the laceration; so that if reduction be attempted in this position, the head being separated from the glenoid cavity by a more or less broad ligamentous bridle, it cannot succeed unless by rupturing this bridle, which it is not always easy to do. When, however, muscular resistance having been overcome by a sufficient extension sufficiently prolonged, the head of the bone is brought by rotation outwards to the middle of the rupture, it suffices to push it with the hand to effect reduction—if it has not become self-adjusted without any noise. Preparatory to this movement of rotation, M. Panas causes traction to be made at the arm above the elbow, instead of at the wrist. In this way the flexed forearm is in readiness to be carried outwards at the appropriate moment. Much force is not required for extension, provided the muscular relaxation is patiently waited for. M. Panas has succeeded in this manner in somewhat old dislocations, providing a sufficient time had not elapsed to give rise to an altered formation of the articular cavity.—*Med. Times and Gaz.*, Aug. 21, 1875, from *Gazette des Hôpitaux*, July 31, 1875.

53. *Value of Fluctuation as a Sign.*—MR. T. H. BARTLETT, in a short paper (*Brit. and For. Med. Chirurg. Rev.*, July, 1875), considers this subject. All surgeons are aware how often they are deceived with regard to apparent fluctuation being pathognomonic of the presence of fluid. He says, "there must be some peculiar or ill-understood or ill-recognized condition which led many skillful and careful men into error, and which are constantly leading our students into similar mistakes.

"I believe this false fluctuation to be generally due to the combination of two causes of error, one being muscular or glandular elasticity; and the other being muscular or glandular displacement.

"I think any one who tries the experiment will be surprised at the sensation of fluctuation which can be obtained by pressing alternately, as in endeavouring to find the sense of elasticity or fluctuation of an abscess, a muscle across the direction of its fibres, say the biceps, or by similarly manipulating across the direction of the ducts, a firm and fairly large female mamma; either one of these two before-mentioned causes alone might mislead: I mean either the displacement of the gland or muscle or the elasticity of the gland or muscle: but when you get combined the elasticity and the displacement, a supposititious fluctuation is felt so like to the real as to be almost if not quite undistinguishable from it. How, then, are we to be certain, especially in these positions, where either a gland or muscle is liable to mislead us, that the fluctuation we feel is really due to fluid? By a very simple plan, which I have never known to fail, and which is not clearly enunciated to my knowledge in any of our text-books, viz. by practising the manœuvre of palpation, not only across the line of the muscular fibres or of the gland ducts, but also in a direction at right angles to this.

"If the fluctuation be fluid it will be equally felt in all directions; if it be due to muscular or glandular elasticity or displacement, or both combined, it will be only felt in one direction, viz. across the muscular fibres or the gland ducts."

54. *Electrolysis in certain forms of Vascular Erectile Tumours.*—Prof. SPENCE regards this as a most valuable addition to our means of treatment of these often formidable growths. "I do not speak of it," he remarks in his Address in Surgery before the British Medical Association, "as a general method, for there are many forms of *nævi* and erectile tumours, in truth a

majority of that class of diseases, in which other methods are more rapidly effective.

"Galvano-puncture is specially indicated in those cases in which the erectile tumour is deep-seated and covered by healthy undiscoloured skin. Until a few years ago, our interference in such cases was limited to dissecting off and reflecting the superimposed textures, so as to expose the tumour without touching it with the knife, and then strangulating it by strong ligatures, and, when the growth has sloughed and separated, replacing the flaps of skin; or by ligature of large arterial trunks indirectly connected with the growth—as, for example, ligature of the carotid artery for orbital erectile growths. The former method was attended with grave inconveniences and dangers, and the latter, besides entailing risk, was most uncertain in its effects, as you can readily understand from the nature of the disease. More recently, injections with the perchloride of iron took the place of these methods, and, in a great number of cases, answered very well, but in others a very considerable amount of sloughing took place before the rest of the tumour had been consolidated, and in such cases severe hemorrhage occurred, and the life of the patient was endangered. In some cases also the injections of perchloride were attended with a rapidly fatal issue, apparently from thrombosis. I must, however, say that I never saw such a result, though I have long used and continue to use the perchloride of iron injections, and I can only attribute such accidents to the neglect of tearing up the texture of the tumour before injecting the perchloride.

"*Contrast* of the results of different methods is perhaps the most effectual way of impressing their comparative advantages, and shows what advance our science is making; let me, therefore, bring under your notice the following cases from my own practice. An infant, six weeks old, was sent to my care on account of a deep-seated pulsating erectile tumour, occupying the palm of the hand, and extending up the wrist. The tumour had been growing rapidly, and at one point the skin was thin and discoloured. I used injection of perchloride of iron, and part consolidated. Again it was used, and the consolidation was followed by inflammation and the separation of a small central slough. From the ulcerated surface bleeding took place, and, though arrested by local application of the perchloride, it returned from time to time; and as the child's life was thus endangered, and the growth seemed rather to increase than diminish, I was forced to amputate in the forearm, when the infant was eight weeks old. She made a very rapid recovery, but with the loss of a hand. I show you here the cast of the hand of an infant affected with deep-seated pulsating erectile tumour very similar to the former. In this case I applied electrolysis during three months, while the child was under my care in hospital, and by several applications of the battery the growth began to consolidate and contract, whilst, except at the time of an application, the child suffered no irritation. As it was inconvenient for the mother to remain in hospital, I asked Dr. Connell, of Peebles, who had sent the case to me, to conduct the remainder of the treatment. As the child's parents lived at some distance from Peebles, the application of electrolysis could only be made at long and irregular intervals. Here is a cast of the hand when the cure was completed; and, when you contrast it with this preparation of the amputated hand of my former case, you will, I think, agree with me that the result is a triumphant vindication of the value of electrolysis in such cases. I have used it also in other cases with advantage, especially in an enormous erectile naevus of the face of a girl. It is of importance that it should not be applied indiscriminately to all cases of naevus or erectile tumours. I think its use should be restricted to cases where the erectile growth is covered to some depth by healthy skin. The needles are coated to a certain length with a non-conducting material, which protects the healthy superimposed texture, whilst the uncovered points passed into the growth act on it at different parts. If needles be applied to a superficial erectile spot, they cauterize and leave more mark than other methods, such as application of nitric acid, perchloride of iron, or iodine. Thus, in treating the large erectile naevus of the face, the electrolysis was only used to the deep-

seated portions, while the superficial discoloured marks were treated by applications of perchloride, iodine, etc."—*British Med. Journ.*, Aug. 14, 1875.

55. *Operations on the Air-passages.*—Prof. SPENCE, in his recent address on the Progress of Surgery, calls attention to some practical points connected with these operations. "There are," he says, "some conditions not sufficiently insisted on in surgical works as to their dangers, or the practice to be adopted, where action requires to be prompt. Thus the danger from emphysema of the loose connective tissue of the neck is seldom adverted to; and yet I have seen a patient all but suffocated from this cause from a small oblique wound of the larynx inflicted with a penknife. In that case, I had to perform laryngotomy, and was obliged to make numerous incisions to afford relief; when a simple enlargement of the wound, in the first instance, would have allowed the air to escape externally. Again, in tracheotomy for removal of foreign bodies, it is generally considered unnecessary to use a tube after the foreign body has been expelled, but merely to allow the incision to close at once. The consequence is that a good deal of trouble often results, for the wounds in the trachea and the superimposed parts do not correspond, and air and mucus escape into the cellular tissue, sometimes giving rise to considerable emphysematous swelling of the neck, and often leading to deep-seated irritation of the wound. In my own operations after removal of foreign bodies, I insert a tracheotomy tube, and retain it until the surface of the wound is glazed by the effusion of lymph; and then approximate the margins of the wound by strips of plaster, so as to avoid all risk of confinement of air or mucus in the tissues in the vicinity of the trachea. Another point of importance is the question of exhibiting anæsthetics in operations for removal of foreign bodies. Many years ago, I drew attention to this, and pointed out that when the foreign body was loose in the trachea or bronchus, the exhibition of anæsthetics interfered with the force of the expulsive powers which usually eject the foreign substance; and, as happened in one of my own cases, the foreign body may be carried back by the incoming current of air, occlude the bronchus, and cause collapse of the corresponding lung. In other cases, as when the body is impacted in the bronchus or larynx, anæsthetics are most useful in enabling us to search for and remove the foreign substance. In doubtful cases, the rule should be to open the trachea without using anæsthetics; and, if the foreign body be not expelled by the natural forces, then to administer chloroform to enable us to deal with it effectually. When, as in the case I have alluded to, a foreign body, such as a plum-stone, is impacted, and fairly occludes the bronchus, being carried before the inspired air, it follows that, the lung beyond being collapsed, there is no force behind to eject the substance. In such circumstances, it is well to avoid trying too much to displace it by means of bent probes or other instruments, unless the end of the instrument can be passed over and beyond the body, so as to tilt it out or allow air to pass to the lung beyond. Our continued efforts, besides exciting local irritability, are very likely to impact it more thoroughly; and I would therefore counsel the surgeon to abstain from useless efforts, and allow the patient to breathe by the sound lung, and wait the loosening of the foreign body by vital dilatation caused by its presence, when air will gradually pass beyond and expel it.

"In hollow or tubular foreign bodies, the case is different; they can be easily removed if we take the proper method—one which I practised some thirteen years ago, in a case where this trachea-tube had slipped down and became impacted in the left bronchus. Instead of trying to open the forceps and seize the edges of the tube, I passed the forceps closed into the tube, and then, on expanding the blades and maintaining them expanded, the foreign body was withdrawn with the utmost facility."—*British Med. Journ.*, Aug. 14, 1875.

56. *Total Excision of the Larynx.*—On July 21 last, Prof. VON LANGENBECK, of Berlin, performed the above operation on a man aged fifty-seven, with cancerous infiltration of the whole upper portion of the larynx above the ventricles, involving also the epiglottis and the hyoid bone, as well as the base of the

tongue. The first symptoms of hoarseness and dyspnoea began four years ago. In November, 1874, he came into the Surgical Clinic with severe dyspnoea, cyanosis, and symptoms of impending suffocation, and the diagnosis of carcinoma was made. As the patient refused to have the larynx removed at that time, tracheotomy only was performed, and he went out relieved in January. In July, 1875, he returned, still wearing the canula, but unable to swallow anything except liquid food. The larynx was swollen, broadened, and hard externally, and at the back of the tongue an uneven lobulated growth could be both seen and felt. His strength and general condition were favourable. The tracheal opening in the neck was, before the operation, continued downwards, and the trachea above the opening plugged with an air-bag, so as to prevent any downflow of blood into the bronchi. The patient was then narcotized by chloroform administered through a canula, and was kept completely unconscious for two hours. Langenbeck made a horizontal incision two centimetres above the hyoid bone, and extending from one sterno-mastoid muscle to the other, and bisected it by a vertical incision. The skin was then thrown back in two flaps, and the larynx dissected out, beginning from above and working downwards, so that the trachea just below the cricoid cartilage was the last part separated. The whole larynx, with the epiglottis, the hyoid bone, and the posterior third of the tongue, as well as the anterior and lateral portions of the pharynx, with the pharyngo-palatine arches, and a small piece of the œsophagus, were then removed.

The following muscles were divided, without reckoning the small laryngeal muscles: The sterno-hyoid and -thyroid, the omo-hyoid and mylo-hyoid, the digastric, genio-hyoid, stylo-hyoid and stylo-glossi, the stylo-pharyngei, and the glosso- and pharyngo-palatine. Forty-one arteries were ligatured, including both external carotids, which were each doubly ligatured and divided between the ligatures; and both pharyngo-glossal and lingual nerves were cut through. Both submaxillary glands were also removed. Langenbeck lays great stress on the operation being conducted from above downwards, as it enables the surgeon to lay bare the greater number of vessels, and to ligature them before they are cut, and so spare as much bleeding as possible. The preparatory plugging of the trachea is also all-important.

The excised portion of the larynx and tongue measured eleven centimetres in length, and the piece of tongue three centimetres, the incision being carried in front of the circumvallate papillæ.

After the operation, the immense wound was simply closed by compresses soaked in a one-third per cent. solution of salicylic acid, and no attempt was made to bring the skin together with sutures. The patient's condition on July 22, the day after the operation, was remarkably good (pulse 100), and he was able to take abundance of liquid nourishment through a tube passed into the œsophagus. On July 28 his progress was still good, and he had no fever. A two per cent. solution of boro-salicylic acid was being used to swab the pharynx and diminish the abundant purulent secretion from the surface of the wound.

This is the fourth case of excision of the larynx. Billroth, of Vienna, in 1873, was the first to perform the operation; he was followed by Heine, of Prague; and in 1874, Dr. Moriz Schmidt, of Frankfort-on-the-Maine, removed the greater portion of the larynx of a man of thirty-six for carcinoma. The patient died five days afterwards. In case his patient goes on well, Professor Langenbeck intends to wait until the wound has completely cicatrized before he attempts to adapt an artificial larynx.—*Medical Times and Gazette*, Aug. 28, 1875.

57. *Inquiry into the Condition of Fifty-one Cases of Lithotrity in Elderly Adults, made at Periods of one or two years after Operation.*—Sir HENRY THOMPSON has published (*Lancet*, July 3, 1875) his interesting inquiry on this subject, with a view of ascertaining whether the results were permanent.

During a period of seventeen months, Sir Henry performed lithotrity on 53 patients, of whom two died, leaving 51 recoveries. "The mean interval between the date of operation and the present report of condition, for these

51 cases which are the subject of inquiry, is, therefore, about twenty months instead of 'one year.' An examination of these cases, given in a tabular form below, shows that respecting six patients I have been unable to obtain the information required; but the weight of such evidence as exists relative to these is greatly in favour of their being better and not worse than the average, since their mean age is only fifty-four years, nearly ten less than the mean of the whole series. As I am compelled to omit these from my reckoning, I believe that my report is less favourable to lithotrity than it ought to be.

"The number of individuals, then, of whom I have precise information, is 45, averaging about sixty-four years of age. Of these, 11 have since died. The causes, certified by their medical attendants, were—2 of organic heart disease; 1 of malignant disease; 1, at eighty, of natural decay; the other 6 of urinary disorders and advanced age together (the mean age being sixty-six years). All but one of these latter were individuals who for several years had passed no urine except by catheter, who owed their lives solely to surgical art, and who without it must have died miserably some years before. The prolongation of life had been entirely due to the improved modern means of mechanically removing retained urine and accumulated phosphatic deposits. Of the 45, 34 are living still; 28 of them enjoying good health and active existence, at a mean of sixty-three and a half years of age. The other 6 have some signs of recurring calculus, 2 having had a newly formed calculus removed; all are well but one of these, who is in bad health and suffers much.

"I think I may leave these figures to speak for themselves. I shall make one observation, however, which, although a very natural one, does appear not to receive the consideration which I think it deserves. Supposing that these 53 cases of lithotrity (including 2 deaths with 51 recoveries) had been cut instead of crushed, how many fatal cases would have followed the operation? Their average age being sixty-three, 14 deaths would not have been a bad result, somewhat better than published tables offer us.¹ But after these operations, mainly done in 1873, only 11 deaths have since occurred *up to the present date*. And even if we were to reckon all these as deaths resulting from the operation, although, as may be seen below, they were quite unconnected with it, we still should have a total of recoveries larger than after lithotomy. There is, however, much reason to believe that the few examples of chronic cystitis with recurring phosphatic deposits, subsequent to lithotrity, occur generally in those feeble and diseased persons to whom lithotomy is most commonly fatal. The fact is, that almost all those patients whose subsequent troubles remain, and who, to superficial observers, appear to discredit lithotrity, do in reality owe their existence to the operation, and are trophies of life absolutely saved by it.

"Thus it is that lithotrity, as I have observed, has created a new set of cases—men who, until the process was brought pretty nearly to its present perfection, never lived. Respecting them I should like to write the results of my experience, and hope ere long to do so. They are men whom lithotrity keeps alive—who, thanks to the ease and safety with which a small and newly formed phosphatic calculus can be crushed, go on for years to live and even to be active. These cases have to be kept apart from other cases of stone, because it would invalidate any inference from numerical statements were a surgeon to reckon as a 'case of lithotrity' each time. perhaps twice a year or more, he removed a calculus from such a patient, although it might not always necessarily be very small. But it is not to be forgotten that before the time of lithotrity there was no adequate help for such a patient except by the cutting operation, and many such died miserably with bladders filled with phosphatic material."

58. *Treatment of certain Cases of Stricture of the Urethra by a Combination of Internal and External Division.*—Mr. THOMAS ANNANDALE remarks (*Ed. Med. Journ.*, June, 1875) that the recognized treatment of stricture of the urethra, complicated with numerous fistulous openings and great thickening of the perineal and scrotal tissues, is a free external division of the perineum

¹ I may refer to my own table of 1827 cases, collected with great care, among others, as supporting this view. "Lithotomy and Lithotrity," 2d edit., p. 142.

and strictured part of the urethra. The difficulty of thoroughly dividing the entire strictured portion of the canal Mr. A. has experienced, especially when the stricture is a light one. Another difficulty in such cases is the fact that a considerable extent of the urethra is often involved, or several strictures may exist, and experience shows that unless the whole urethra be properly dilated, a good result cannot be expected.

A few weeks ago a patient was admitted into Dr. A.'s wards, suffering from an aggravated form of this condition. "He had suffered from stricture of the urethra for four years, and about eighteen months before his admission abscesses formed in his perineum, buttocks, and scrotum, and gave rise to numerous fistulous openings in these situations. An examination determined the existence of a tight stricture of the urethra in the region of the bulb and anterior to it. The stricture was nearly two inches in length, and in addition there was a stricture, not so tight, in the anterior part of the urethra, about two inches from the meatus. There were five or six fistulous openings in the perineum, and several others in the buttocks, close to the anal orifice. The whole perineal textures were much thickened, and several hardened nodules of skin and cellular tissue were scattered through this region, resembling somewhat in appearance those occasionally met with in cancerous disease. The whole of the urine was passed through the fistulous openings. With some difficulty a No. 2 metal catheter could be passed through the stricture into the bladder.

"In considering the treatment of this case, I knew it would be necessary to freely incise the middle line of the perineum, and also to divide the strictured portion of the urethra, in order to obtain a cure of the affected parts; but I also knew from experience something of the difficulties in successfully carrying out this proceeding. I was therefore glad to avail myself of a hint which I received in reading some very interesting papers on stricture of the urethra, by Professor Otis, of New York; for his suggestion seemed to me to be one likely to be very valuable in certain cases of the kind under observation. Professor Otis, having a case of stricture complicated with fistulous openings to treat, first incised the perineum, and opened the urethra externally to a slight extent, and then introduced a urethrotome, and freely divided all strictured portions of the canal.

"Taking a lesson from this case of Professor Otis, I operated on my case in the following way:—

"Having passed a No. 2 silver catheter through the strictures into the bladder, I made a free incision in the middle line of the perineum, through the thickened tissues, and opened into the urethra immediately behind the point of the posterior stricture. I made no attempt to divide the stricture by this external incision, but, having removed the catheter, I introduced along the urethra into the bladder the fine-grooved staff of a urethrotome (one after Maisonneuve's principle), and then, by passing the knife of this instrument along the whole length of its groove, the entire strictured portions of the canal were thoroughly divided. The whole operation did not occupy more than a few minutes, and I was much impressed with the advantages as regards easy and quick performance over the method of external division as usually followed. A No. 12 catheter was readily passed into the bladder after the operation, and was retained there for twenty-four hours. The patient's progress after the operation was in every way satisfactory. The thickening of the tissues gradually but entirely disappeared, and the fistulous openings soundly closed. The urine now comes freely by the natural way, and a No. 12 bougie can be easily passed along the whole course of the urethra into the bladder. The operation wound in the perineum has nearly closed, and not more than a drop of urine passes occasionally through it.

"A second case of urinary fistula was shortly after admitted into my wards, and was treated in the same way, with a like good result."

This plan of operating appears to Mr. A. to be well worthy the notice of surgeons. "I do not," he says, "advocate it in cases of stricture other than those of which the cases related are illustrative examples; but I have no hesitation in strongly recommending it in suitable cases. Internal division is be-

coming more and more recognized in this country as the safest and most efficient treatment of strictures of the urethra which do not yield to simple dilatation, and my extended experience of this operation during the last few years has made me a firm advocate of it in proper cases.

"The combination of internal division with external division in complicated strictures such as have just been illustrated by these cases, has, in my opinion, the following advantages over external division alone:—

"(1.) The complete and accurate division of all strictured portions of the urethra.

"(2.) Its easy accomplishment.

"In cases of complicated urinary fistula, in which the stricture of the urethra is impassable to instruments, or a portion of the canal is obliterated, I should, in the first instance, endeavour to re-establish a passage by external division; and then, if any portion of the urethra could still be felt to be strictured, I would introduce the urethrotome, and freely divide by internal division such contracted portion."

59. *Rupture of the Urethra.*—M. NOTTA submitted to the Surgical Society of Paris at a recent meeting the question: "What conduct should the surgeon pursue in cases of violent contusion of the perineum with rupture of the urethra without external wound, but complicated with retention of urine?" When we consult the classical authors we find ourselves greatly embarrassed, for while some of them advise supra-pubic puncture, others practise incisions in the perineum, and others, again, recommend antiphlogistics first being had recourse to. In presence of such divergencies, M. Notta relates three cases that have terminated successfully, and which he believes are of interest. In the first the patient had received violent kicks in the perineum, and at the end of thirty-six hours urinary infiltration had spread into the scrotum. Free egress was given to this by a large incision, and three days after a catheter was passed and left in (*sonde à demeure*). Fifty days after, the man was discharged cured. In the second case, contusion of the perineum was produced by the fall of an enormous stone, and four hours afterwards the perineum was found distended, and a catheter could not be passed. The urine was at once discharged by a button-hole operation in order to prevent infiltration, but the patient was lost sight of during three weeks, no catheter having been passed during that period. He was now menaced with retention by the cicatrization of the perineal wound, and a laborious dissection of indurated tissues became necessary to find the two ends of the ruptured urethra and pass a *sonde à demeure*. After several months of treatment, and the performance of internal urethrotomy, the patient was cured. In the third case, a mason fell astride a joist and exhibited the signs of rupture of the urethra, the distended bladder rising up to the umbilicus. A perineal incision gave issue to the urine, and a week after a *sonde à demeure* was introduced, and in five weeks after the accident the patient was cured, passing his urine freely by the urethra.

Thus, in these three cases, as soon as catheterism was found to be impossible, a large perineal incision was practised in the perineum. Supra-pubic puncture was not resorted to, for a great number of cases that have been published show that this has not prevented the formation of abscess in the perineum, which has compelled the surgeon to resort to the perineal incision, with which he had better have commenced. After from three to eight days the wound becomes sufficiently cleansed to allow of the *sonde à demeure* being passed for the purpose of re-establishing the integrity of the canal—the introduction of this being much facilitated by employing a long flexible whalebone bougie as a conductor. M. Notta always employs vulcanized caoutchouc catheters, which, being little acted upon by the urine, can remain a long time in the bladder without being changed. The incision into the perineum often requires to be very deep, in consequence of the great tumefaction that has taken place, and M. Notta has had to plunge his bistoury to a depth of ten centimetres.

M. Guyon observed that he had often met with these cases, and pursues a practice very like that recommended by M. Notta. It is dangerous to endeavour to penetrate into the bladder by the urethra, for the lacerations may

be increased and considerable hemorrhage produced. Sometimes, indeed, the bulb has been torn. We must, therefore, act through the perineum, and a true external urethrotomy has to be performed without a conductor. Immediately afterwards a bougie is passed in at the posterior end, and is then carried from behind forwards into the urethra, serving as a conductor for the *sonde à demeure*, the compression of which assists in arresting hemorrhage. Just as performing external urethrotomy without a conductor is a difficult procedure in a degenerated and fistulous perineum, so it is a simple operation after recent injury. M. Sée has recently met with two cases in children who fell astride bars of wood. In both there was effusion of blood and urine, and retention. In one case a catheter was introduced, and large incisions of the perineum were practised, and all bad symptoms at once disappeared. In the second case, in which the effusion was great, a catheter was also passed, but, slipping out, could not be replaced, and incisions were not practised until a few hours before death. M. Giraldès related the case of a boy who had crushed his perineum by a fall on a carriage-wheel. There being complete retention, the bladder was punctured above the pubes, and a litre of bloody urine having been evacuated, a *sonde à demeure* was passed through the same aperture into the urethra from behind forwards, and thence into the perineal wound which had accompanied the injury. The patient did well. M. Le Fort believes that a distinction should be made in these cases. Sometimes the contusion is accompanied by a considerable effusion of blood and urine, while at others there is but a slight effusion of blood, and yet the patient cannot pass urine. In the first of these cases, incision should at once be performed, for, if this be delayed, diffused phlegmon will be set up, for which it will have to be resorted to. In the slighter cases the bladder may be punctured, and, some days after, a catheter may be passed. M. Notta observed that in the slighter cases spoken of by M. Le Fort there is no rupture of the canal, the retention being then dependent on the compression caused by the effused blood. In such cases puncture may be used as a means for gaining time. M. Guyon observed that when there is very great tumefaction of the perineum, rupture of the urethra is present. In the other cases the catheter is passed with difficulty, but it can be made to enter.—*Medical Times and Gazette*, June 19, from *Gaz. Hebdom.*, June 4.

Incising the perineum, as advised by M. Notta, seems to be the true course in cases where the urethra is ruptured by external injury. This we supposed was well established many years since, and we will refer to some remarks on this subject by the editor, illustrated by numerous cases, in the number of this Journal for February, 1837, page 392 et seq.

60. *Double Fistula in Ano ; one treated by the Knife, the other by Elastic Ligature.*—Mr. MAUNDER communicated to the Clinical Society of London (May 28th, 1875) the following case: The patient, a female, æt. 24, had suffered from fistula *in ano* for some time; one fistula on the right side having made its appearance two years ago; another on the left side twelve months previously to her coming under observation. These two fistulæ were equidistant from the anus, and extended to about the same depth, where they communicated with the bowel. The one on the right side was divided by the knife, and the elastic ligature was applied to the one on the left. The knife-wound was dressed with a strip of oiled lint, and no application was made to the other. For two or three days after the operation, the patient complained of severe pain, and this was especially referred to the left side. On the sixth day, the ends of the ligature were found lying in a deep groove, which they appeared to have cut in the tissues; and, on the ninth day, the ligature came away. On the twelfth day, the wound made by the knife was almost on a level with the surrounding parts, while that which was the result of the ligature was a deep groove, having very prominent callous edges like the margins of a chronic ulcer of the leg. On the twenty-second day the knife-wound was completely cicatrized, but that made by the ligature was only partially healed, and still grooved. Five weeks after the operation it was found that the groove left by the ligature was converted into a sinus, the edges having united; it was, therefore, again united, and complete union took place in about a fortnight, *five*

weeks after the wound made by the knife had closed. Mr. Maunder remarked that, as a rule, it would be wrong to endeavour to establish a principle of practice from the experience of a single case, but the test of the efficiency of a method of treatment was absolutely trustworthy when two different operations were performed simultaneously upon the same patient, who was the subject of a similar complaint in corresponding localities. Under these circumstances, the history of the above case would induce him to declare in favour of the knife as a means of causing less pain and quicker restoration to health. The elastic ligature might be reserved for those who would on no terms submit to a cutting operation, as well as for those of hemorrhagic diathesis.—*British Med. Journal*, Aug. 21, 1875.

OPHTHALMOLOGY.

61. *Affection of the Eye in Bright's Disease.*—Dr. MEIGHAN demonstrated to the Glasgow Pathological and Clinical Society (April 13), with the ophthalmoscope, a case of disease of the retina in a woman aged 22, with albuminuria. She had first come under his notice at the Eye Infirmary in December last, complaining of dimness of vision of six weeks' duration. She could then read No. 19 with the right eye and No. 20 with the left (Jäger). The papillæ were then found congested, and not defined at their margins; the arteries were diminished in number and calibre, and some of them accompanied by white streaks; the veins were dilated and tortuous, and the vessels covered at parts by a whitish infiltration. In the neighbourhood of the macula lutea a large yellowish-white granular patch was seen, with shining spots interspersed; numerous white spots were seen elsewhere in the fundus, and also some hemorrhagic spots. The eyes were hypermetropic. The urine was found to be albuminous, specific gravity 1010; and the sediment contained granular casts. There was no dropsy, but there had been headache and vomiting. The heart was hypertrophied. She improved so that she could read No. 16 and No. 12; but on February 22d, intense headache, with slight delirium and vomiting, supervened, and next day she could not distinguish light from darkness. There was then circumorbital œdema, with œdema and congestion of the conjunctivæ, and dilated pupils. Ophthalmoscopic examination showed œdema of the retina, the refraction being thus rendered highly hypermetropic; and a large white mound encircled the disk, and at the circumference a few hemorrhagic spots were found. The urine had become diminished before this attack, and the breath seemed to have a urinous odour. The œdema of the retina subsided, the urine increased, and the vision improved, so that on April 8th she could read No. 6 with the right and No. 4 with the left. When she was shown to the Society, the œdema had disappeared, but the white spots had extended and coalesced, forming large patches: the hemorrhagic spots had become absorbed. The urine was still albuminous; measured during the previous week, it had averaged 36 ounces, and the specific gravity was rather low. There was no dropsy. The cardiac hypertrophy affected chiefly the left ventricle. Dr. Meighan regarded the case as of interest, in showing a well-marked lesion of the retina in Bright's disease apart from dropsy. There was fatty degeneration of the cellular tissue of the retina, as well as sclerosis of the nerve-fibres and bloodvessels. The sudden loss of vision, associated with something like uræmic poisoning and œdema of the retina, had come on with a diminished secretion of urine; and the sight improved as the urine became more abundant.—*British Med. Journal*, June 12, 1875.

62. *Miners' Nystagmus.*—Dr. CHARLES BELL TAYLOR describes (*Lancet*, June 12, 1875) under this name a peculiar malady of which the mines in the neighbourhood of Nottingham have, during the past twelve years, furnished him several examples. It is characterized by the peculiar oscillating motions of the eyeballs, and has been observed only in adults, and independent of other

ocular defects, among men employed in coal-pits. The oscillating movements are caused by alternating contractions of the recti or oblique muscles, and in all the cases observed by Dr. T. have been horizontal or rotatory.

"This affection," he says, "appears to be analogous to writers' cramp, pianists' and telegraphists' cramp, or the similar affection of the gastrocnemii occasionally observed in ballet-dancers. It may be developed in any or all of the muscles supplied by the third nerve, and is clearly caused by the over-taxing of these organs. The patient makes a great and sustained effort to see in an imperfect light; the muscles engaged in the accommodative strain are overburdened, in course of time give way, and at last, whenever called upon, just as in the analogous cases cited above, become, as it were, agitated and fluttered, escape from the control of the will, and perform irregular motions. It is clear, from these facts, that in all cases in which a considerable degree of exertion of the ocular muscles is required for distinct vision, nystagmus may, under certain concomitant favouring circumstances, be developed. Hitherto the cause of nystagmus has been referred to, and might usually be readily detected in, the eyeball itself; but these cases demonstrate that causes external to the organ, and independent of any structural or apparent functional changes, may occasion all the phenomena of that disease, or, more properly speaking, symptoms of disease. Nystagmus generally persists so long as its cause remains, and, if developed in childhood, may continue even after its removal; but in 'miners' nystagmus' the aphorism *sublata causa tollit effectus* applies, and, as a rule, change of occupation and working in a good light are all that is necessary to effect a cure," supplemented by such auxiliary treatment as may, in each case, appear to be specially indicated.

63. *Method of Improving the Patient's Appearance in the last stage of Ophthalmia Tarsi.*—Dr. SOMERVILLE OLIVER, in a communication to the *Edinburgh Medical Journal* (June, 1875), remarks that "in the advanced stage of ophthalmia tarsi—the stage sometimes termed 'lippitudo'—when the eyelashes have disappeared, and the edges of the eyelids have become rounded, perhaps tumid and everted, after all has been done for the patient that can be done by the usual means adopted in such cases, the unseemly appearance caused by the loss of the eyelashes and the red margin of the lids is still very conspicuous; but it may, he thinks, be considerably lessened by *tattooing the margin of the eyelids* as darkly as possible with Indian ink.

"By using Snellen's eyelid forceps, there can be no risk of pricking the eye itself. Darkening the margin of the lids by tattooing would also mitigate the disfigurement caused by removal of the cilia and their bulbs in cases of trichiasis and distichiasis."

MIDWIFERY AND GYNÆCOLOGY.

64. *Fœtal Heart at an early period of Pregnancy.*—Dr. UNDERHILL related to the Obstetrical Society of Edinburgh (May 12, 1875) the following case:—

"On Sept. 6, 1874, I was asked by my brother, a medical student, to see a woman, Mrs. McGair, æt. 30, multipara, who was ill with fever, in the High Street. I found her a very spare and thin person, suffering from a moderately severe attack of typhus fever. She said she was several months pregnant—about three or four—but could not tell exactly. The abdominal wall was thin and lax, as she had had several children before. On palpation, I could not make out distinctly the shape of the enlarged uterus, but percussion revealed dulness extending for about two inches above the pubes. On placing the stethoscope on the dull part, and to the right of the middle line, I distinctly heard the double pulsation of the fœtal heart, and, taking out my watch, counted it; it was beating at the rate of between 160 and 170 pulsations per minute, while the mother's pulse, which I also counted, was only about 120. My brother afterwards listened and heard the heart beats and also counted the

number of pulsations, making them about the same as I did. I recommended the removal of the patient to the Royal Infirmary, where she was taken two days later, and was dismissed convalescent in a fortnight. She was delivered of a very large and healthy child on the night of 8th March, 1875—that is to say—six calendar months and two days, or 183 days, after I heard the foetal heart, which was, taking 278 days as the average duration of pregnancy, only 96 days (13 weeks and 5 days) after the supposed successful coitus. It is right to add that the woman expected to be confined some time before the labour came off, and the very large size of the child makes it possible that pregnancy was protracted somewhat longer than usual, and that consequently an earlier date should be fixed for its commencement. But still the fact remains that the foetal heart was heard in this case six calendar months before parturition, that is, about the beginning of the fourth calendar month of pregnancy.

“I have thought this case worthy of a short note, as being one of the earliest dates on record of hearing the foetal heart, and because it shows that in a favourable case the diagnosis of pregnancy may be made certain in this way much earlier than is usually supposed. We were fortunate in this case in hitting upon the spot where the heart was nearest the surface at once, but in other cases in which I have examined for it in the middle months of pregnancy, I have generally found it to require considerable and sometimes prolonged search before it could be hit on, and the extreme mobility of the foetus at this early period seldom allows of its being heard for many minutes consecutively in the same spot.

“The period at which the foetal heart first becomes audible is very differently estimated by different authors.

“M. Depaul,¹ who investigated the subject with great care, stated that in 73 cases in which he examined for the foetal heart-beat before the 20th week, 11 were in the third month, and in none of them was it audible; 22 were in the fourth month, and in two of them only, each of whom had reached three and a half months and dated from single coitus, was it perceptible; in the remainder, who were more than four calendar months pregnant, not to hear the foetal heart was the exception. He further relates that, in endeavouring to show that the uterine souffle is audible at a very early period of pregnancy, he came upon two cases which proved to him that the heart can be heard at the end of the third month.”

Dr. M. remarked that “the question of the earliest period at which these sounds become audible is of importance from two points of view: first, from the bearing it has upon practice in relation to the diagnosis of pregnancy in the earlier months; and, secondly, it is of physiological interest as showing at how early a period of its development a foetus possesses a heart capable of producing sounds audible through the abdominal wall of the mother.

“Thus, in the fourth lunar month, *i.e.*, from the end of the 12th to the end of the 16th week (and you will remember that in the case before us the foetus was supposed to be in the 14th week), the foetus, according to Schroeder, is from 10 to 17 centimetres (4–6½ inches) in length, and weighs as much as 1860 grains, or about 3½ ounces; and it is during this month that the external genitals first begin to assume the sexual distinction; similarly, Caspar says, that at the end of the fourth lunar month the embryo weighs 2½–3 ounces, and is from 5 to 6 inches long, the sex is just recognizable, etc. Now, it seems to me to be a point worthy of attention, if it can be proved that a being in other respects so small and imperfect, yet has a heart of such considerable power, for the size of the organ must be exceedingly small.”—*Edinburgh Medical Journ.*, September, 1875.

65. *On the Employment of Chloral as an Anæsthetic in Natural Labour.*—Dr. H. CHOUPE, in the *Annales de Gynécologie*, May, 1875, has collected a large number of cases, recorded by various authors, exemplifying the use of chloral in labour; and from these, together with his own observations, he concludes that chloral, even in a dose capable of producing complete anæsthesia,

¹ *Traité d'Anscultation Obstétricale.* Paris, 1847. Pp. 243 *et seq.*

in no way suppresses, or even diminishes, the contractility of the unstriated muscular fibres in general, the uterus included. Chloral, which is capable of producing in a marked degree cutaneous anaesthesia, can equally nullify the pains of labour. This suppression of pain is not due to diminution of the uterine contractions either in their intensity or their frequency; on the contrary, all their power is preserved, and, if they seem occasionally to be retarded, that which they lose in frequency they gain in force; so much so, that labour is accelerated and not retarded. When uterine inertia is recognized as the cause of too prolonged labour, which has exhausted the powers of the patient, or when the patient is particularly irritable and fatigued by the useless efforts, and the uterine contractions diminish in frequency or intensity—when inertia is threatened, in fact—chloral administered in a dose sufficient to produce complete anaesthesia, is generally capable of restoring energy to the uterus, and force and regularity to the contractions.

Neither the infant nor the mother is injured by chloral anaesthesia. M. Pelissier, who has employed chloral largely, states that when administered prudently and in suitable doses, it is perfectly innocuous; indeed, the foetus runs less risk of becoming asphyxiated. No evil after-effects retarding convalescence have ever been observed; on the contrary, patients seem to rally more rapidly from having been spared so much fatigue.

It remains to indicate more precisely in what cases chloral should be administered, at what stage of labour it ought to be given, in what dose, in what form, and by what channel.

Chloral will agree whenever it procures sleep, induces repose, and lessens the pains of parturition. It should especially be employed in tedious labours, and in primiparae, because then the pains have an intensity which we only find exceptionally in subsequent confinements. It often happens that, the pains being very intense and the patient very nervous, force is wasted uselessly; and at the moment when they have, above all, need of all their force for the last expulsive efforts, the patients are fatigued, and the uterus ceases to contract. In these cases chloral, which procures repose and which prevents the patient from wasting her strength, is formally indicated.

Among nervous patients, who excite themselves and complain beyond measure, chloral will expedite delivery; and, even if during pregnancy we can promise to materially diminish the pains of labour, we shall lessen considerably the patient's apprehension.

Among hysterical patients, chloral acts beneficially.

The consideration of the employment of chloral in operative midwifery, and in eclampsia, as advocated by Dr. Playfair, is purposely omitted here, in accordance with the title of the paper.

When should chloral be given? In the immense majority of cases, when the dilatation of the os is complete—just as the expulsive pains commence. It is only in exceptional cases, and where patients suffer unusually, that chloral should be given during the period of dilatation.

The dose of chloral necessary will vary with the susceptibility of the patient, and with the effect one wishes to obtain. The dose generally varies from one drachm to one and a half drachm, given in two doses at half hour's interval, or in fifteen-grain doses every quarter of an hour, if we do not desire too rapid an effect.

The natural channel for its administration, and the one which should always have the preference, unless contraindicated, is by the stomach. The syrup of gooseberry is the best agent for masking the pungent flavour; and the solution should be made of such a strength that a teaspoonful represents fifteen grains. Should vomiting precede or follow its administration, it may be given by the rectum. As regards intravenous or hypodermic injections, they are too dangerous methods for ordinary natural labour.—*London Med. Record*, June 23, 1875.

66. *The Placenta in a Triplet Birth.*—M. DEPAUL exhibited, at the Académie de Médecine, the placenta derived from a woman who had been delivered of triplets, the children at present (thirty days afterwards) being still alive. The

placenta forms a single mass of very considerable size, and the three distinct cords present examples of the three principal varieties of insertion. One of them is inserted into the centre of the placenta, another at its edge, and the third into the membranes, vascular communications existing between the cords. There are also three amniotic sacs.—*Med. Times and Gaz.*, July 17, from *L'Union Méd.*

67. *Contribution to the Pathology of the Ovary.*—Dr. J. FOULIS read a paper on this subject before the Obstetrical Society at Edinburgh, May 12th, 1875. The author gave a short statement of the views of Waldeyer on the development of the Graafian follicles and cells of the membrana grannulosa, in which he laid stress on the fact that, whereas Waldeyer's investigations showed that both the cells of the membrana grannulosa and eggs were derived from the germ epithelium on the surface of the ovary, his own investigations appeared to show that the eggs alone were derived from the germ epithelium, and the cells of the membrana grannulosa were derived from connective tissue corpuscles of the stroma of the ovary. Having this fact as a basis for investigating the origin of cystic tumours of the ovary, Dr. Foulis stated that, as the result of numerous observations on the origin of cysts in the diseased ovary, he was able to demonstrate that, though many of the cysts of an ordinary cystic tumour of the ovary were simply over-distended Graafian follicles, in the walls separating these there was a growth of new cysts quite unconnected with presenting Graafian follicles, which might go on to an unlimited extent, and that the epithelium of these was produced from connective tissue corpuscles. He then drew attention to the very interesting fact that, in addition to the production of the epithelium of the cysts, the connective tissue corpuscle of the stroma, by general and excessive proliferation, might give rise to sarcomatous growths in the ovary; and that, through the escape of epithelial elements from the diseased stroma and cysts into the peritoneal cavity, secondary sarcomatous growths might arise on the peritoneum, which, by constant irritation, resulting in the pouring out of ascitic fluid, ultimately exhausted the patient. Dr. Foulis showed drawings of the little masses of sprouting cells which he had discovered in ascitic fluids surrounding ovarian tumours, and by the presence of which he had diagnosed malignant ovarian tumour and peritonitis in two cases whose histories had already been given to the Society; and he now gave short notes of three additional cases in which he had discovered the same little masses of sprouting cells in ascitic fluid, and in two of these cases a *post-mortem* examination verified the diagnosis made during life, viz., malignant ovarian tumour and peritonitis. The third case was that of a woman still alive, and in the ascitic fluid present an enormous quantity of the little masses of the sprouting cells were found. He then laid great stress upon the importance of a careful examination of ascitic fluids in cases where ascites complicated ovarian disease, and pointed out how rarely it was possible to get fluid by tapping from malignant tumours themselves, which were generally semi-solid. He ended by saying that it remained for future observation, to settle the question whether little masses of sprouting cells are ever found in ascitic fluids surrounding other malignant tumours of the omentum, peritoneum, etc., structures in which fibrous connective tissue exists in quantity.—*British Medical Journal*, Sept. 4, 1875, and *Ed. Medical Journal*, Sept. 1875.

68. *Series of Fifty Cases of Ovariectomy.*—Mr. T. KEITH has published (*British Med. Journal*, June 26th, 1875) his fourth series of fifty cases of ovariectomy. "There have been," he states, "fewer operations than in former years; but I have reason to believe, now that ovariectomy has become a comparatively common operation, that the more severe cases of the disease only come to me. During this period I have also been able to diagnose and cure by a single tapping, four cases of serous cyst of the broad ligament. These tumours would some time ago have probably been removed by operation."

Of these fifty operations six terminated fatally from septicæmia. In two of these the tumours were malignant.

"Further experience," says Mr. K., "has satisfied me of the value of the

actual cautery in the treatment of the pedicle, and I am coming to the conclusion that it is the best of all the intraperitoneal methods for securing the pedicle. At first I was prejudiced against this method, and only used it in the worst cases, where the clamp could not be employed. It has had from me a very severe trial, and, when the numbers are larger, I shall publish the whole of the cases in detail. This method, as is well known, was introduced by the late Mr. Baker Brown, and, after trying all sorts of improved clamps, I have gone back to the simple rough tool so successfully used by him.

"Sulphuric ether has been given in all the cases."

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

69. *Death induced by the excessive Smoking of Tobacco.*—Dr. B. W. RICHARDSON records (*Brit. and For. Med. Chirurg. Rev.*, July, 1875) the following example of this, which came under his own observation :—

"The patient, who was between thirty and forty years of age, was a small but well-built man, of very active habits, and reported to be exceedingly diligent and able in commercial pursuits. Previous to the occurrence about to be narrated he had been very much worried with business affairs, and had, no doubt, been trying to carry out labours which, if not beyond his own natural powers, at all events taxed them severely. He returned from business in the city of London one evening extremely fatigued, took a very slight meal, smoked several cigars and cigarettes—the precise number being unknown—and retired to bed. During the night he was heard moving about as if restless, and early the next morning he rose to work. He dictated some letters and other documents to his private secretary, and, declining all food, recommenced to smoke a cigar. He continued this process of smoking and dictating during the greater portion of the day, taking no food and, except a small quantity of brandy and water, no drink. In a period of less than twelve hours he had smoked forty cigarettes and fourteen full-sized, full-flavoured cigars. As the evening advanced he became prostrate, excited, and restless, refusing food and only sipping at drinks. Late at night he still refused to take either nourishment or medicine. He agreed, however, to give up smoking, and he went to bed and essayed for a few hours to sleep: he could not sleep, but continued excited and restless.

"Early on the following morning he came for the first time under the observation of the reporter. He was at this time half dressed and out of bed. He was in a state of continuous muscular tremor, and when he moved across the room to reach his bed his legs seemed bent or bowed as if he were permanently deformed, which, however, was not the fact. He had evidently lost the full use of the muscles of the lower extremities, and he climbed into bed with considerable difficulty. When he reclined in the bed a continued movement of the muscles of the arms and legs was kept up, and the facial muscles moved occasionally in an involuntary manner. The pupils were widely dilated and the eyelids were in persistent movement, half voluntary. The tongue was dry and dark red in colour. The surface of the body was cool (96° Fahr.), clammy, and perspiring. The speech was faltering and the mind uncertain. The pulse was soft, full, and feeble. Both sounds of the heart were clear, but the action was relaxed and occasionally intermittent. The respiratory sounds, at this period, were clear, but the respiratory movements were irregular and sighing. The breath and the cutaneous secretion were oppressively charged with the odour of tobacco.

"There being no direct antidote yet discovered for the poison of tobacco, the treatment was directed to sustaining the powers of the patient and to promoting the elimination of the poison. Of course all further resort to the cigars and cigarettes was forbidden, and fluid nourishment was ordered as freely as it could be given, together with small quantities of alcohol; it was directed that the temperature of the room should be sustained at 70° Fahr., with free venti-

lation; and in order to sustain the process of elimination full doses of the solution of acetate of ammonia were administered every four hours. It was also carefully observed that the urinary bladder was kept free of distension from urine, a practical point of great importance in the treatment of all forms of narcotic poisoning.

"The food and medicine prescribed for the patient were much objected to by him, his mind being entirely listless and every exertion seeming to be a source of annoyance. Still, he took and retained some food, and under its influence became warmer. But as the day advanced he gradually grew more and more unconscious, the muscular paralysis increased, extending from the lower limbs to the arms; every now and then there occurred a faint general convulsion, and the breathing became noisy and embarrassed. In the evening the patient was quite unconscious; his bronchial passages were filling with condensed watery fluid; he was unusually cold; there were constant jactitating movements of the muscles, and the collapse was complete. Death took place a short time after this change. A post-mortem examination could not be obtained, but the final mode of death was evidently by asphyxia from the accumulation of fluid in the pulmonary bronchial tract.

"We have not unfrequently observed in confirmed smokers a series of symptoms identical with those recorded above, except in the matter of severity and in immediate result. The symptoms tally, in the main, also with those we have seen induced in the lower animals by the action of nicotine, and they were, we believe, due entirely to the poisonous influence of that alkaloid. The action was distinctive; all the muscles that are under the involuntary nervous control were paralyzed; the semi-voluntary muscles were partly paralyzed; and the centres governing the volitional powers were so distended that their functions were perverted. Together with these changes there was a reduction of the animal temperature owing to an interference with the chemical changes of the body, and thereupon the final catastrophe succeeded of condensation of fluids in the pulmonary organs, a catastrophe common as a direct cause of death in those who are under the effects of other narcotic poisons than nicotine, as, for instance, chloral hydrate.

"The great question that remains to be solved is the treatment of cases such as the one described. In a case of poisoning by tobacco, in a boy who smoked and chewed tobacco for the first time, we found an emetic of signal service as an adjunct to treatment by the employment of external heat and the administration of a stimulant. But in the treatment of a confirmed smoker an emetic would only depress the more, the stomach being in fact paralyzed by the action of the poison. We have previously found the general plan that was adopted in the instance narrated—that, namely, of sustaining the external temperature of the body, promoting free elimination by the skin, keeping the urinary bladder properly relieved, and administering food with a judicious supply of alcohol—a perfectly successful method. On the present occasion all these measures proved unsuccessful, and would, we believe, be again unsuccessful in so extreme a case. It has occurred to us since that perhaps transfusion of blood might have saved the life, and in another emergency of a similar kind, we should propose to give it a trial."

70. *Phosphorus Poisoning*.—Mr. CHARLES A. CAMERON contributes to the *Dublin Journal of Medical Science* (August, 1875) an article on this subject, from which we extract the following: Some fatal cases of poisoning by phosphorus have lately occurred in Ireland; and on the Continent this substance is frequently the cause of death, either by design or accidentally. In manufactories where lucifer matches are manufactured, chronic poisoning by phosphorus is by no means rare. Necrosis of the teeth and of the bones of the jaws was very frequent amongst match-makers until the somewhat general substitution of red, or allotropic phosphorus for the common kind in the preparation of the matches. White phosphorus forms acid fumes on mere exposure to the atmosphere, whilst the red kind is unalterable in the air unless when highly heated. There is no good reason why the use of spontaneously inflammable phosphorus should not be wholly given up, as the other kind of this element is an effectual

substitute for the former. Indeed, the use of common phosphorus for this purpose might fairly be prohibited by the State.

In the works on Medical Jurisprudence it is laid down that there is no specific antidote for phosphorus poisoning. When just swallowed, the use of the stomach-pump and the administration of magnesia in the form of paste prove serviceable; but a few hours after the poison has been swallowed it has hitherto been found impossible to check the effects of this powerful substance. The precise manner in which phosphorus produces its toxic effects is not thoroughly understood. The quantity which often produces death is not more than 3 or 4 grains. In fatal cases the lesions revealed by *post-mortem* examination are frequently found to be very trifling—and, indeed, perfectly insignificant, when compared with those caused by arsenic, mercuric chloride, the stronger acids, and all other corrosive poisons. Phosphorus probably produces its worst effects by withdrawing oxygen from the blood.

On the 25th April, 1874, M. Depaire, on the part of the Revision of the Pharmacopœia Committee, presented¹ a report on the employment of essence of turpentine as an antidote for poisoning by phosphorus. The report detailed the results of numerous experiments performed on dogs, the results of which proved that essence of turpentine did not possess, as alleged by recent experimenters, the properties of an antidote to phosphorus. The animals experimented on were dogs; the phosphorus was dissolved in olive oil, and administered by the mouth and by hypodermic injections. The turpentine was given as a gummy emulsion, and was administered by the mouth. The experiments of Curviè Vigier, and more especially of Rommelaere, have, however, shown that essence of turpentine, when not rectified, has the property of neutralizing the toxic effects of phosphorus. In a communication² by M. Rommelaere, read before the Belgian Academy of Medicine, on the 26th December, 1874, the author has shown that rectified essence of turpentine did not act as an antidote in the case of dogs poisoned by phosphorus, but that the common turpentine did. The common turpentine has, especially under the influence of light, the property of readily absorbing the oxygen of the atmosphere, and of parting with it to other oxidizable bodies, and probably of converting part of the absorbed oxygen into ozone. It would appear, then, that essence of turpentine only acts as an antidote to phosphorus by reason of the oxygen which it contains, and which converts the phosphorus into an oxidized and comparatively innocuous body. If this be really the case, the poisonous action of phosphorus must, as surmised, be due to its withdrawal of oxygen from the capillaries. Several experiments have shown that phosphorus dissolved in oil brought into contact with common turpentine, forms a solid compound. If it be really the oxygen or ozone contained in turpentine that acts as an antidote to phosphorus, it might be desirable to ascertain whether peroxide of hydrogen, which parts readily with its oxygen, might not be an antidote for phosphorus. A solution of this substance might be hypodermically injected or given by the mouth. In cases of phosphorus poisoning in man, M. Rommelaere recommends the administration of 1 gramme (15.4 grains) of turpentine every half hour or hour during the progress of the case, fats and oils of every kind, mucilaginous substances, and alcohol.

It has been recommended to suspend small vessels containing turpentine in the rooms where matches are prepared, in order that the vapours of phosphorus might be neutralized by those of the turpentine. We believe that this suggestion has been acted upon in two or three English and Belgian manufactories.

¹ Bulletin de l'Académie Royale de Médecine de Belgique, tome 8, No. 13.

² Ibid., tome 8, No. 13.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Hydrophobia from the Bite of a Skunk. By J. A. WOLF, M.D., Acting Assistant-Surgeon, U. S. A.

I was called April 30, 1875, at four P. M. to visit D. F., aged twelve years, who, it was stated, was suffering with fever. The messenger also informed me that the boy had not been well since the morning of the 29th, and that he had been bitten by a skunk several weeks previously. I prescribed bromide of potassium $\mathfrak{zj}$, one-half to be given at once, the remaining half an hour thereafter.

On my arrival, at 6 P. M., I was informed by the parents that on the night of the 6th of April, while sleeping on the ground in a picket building, he was bitten by a skunk through the tip of the nose and end of the left thumb. The wounds were small and healed in a few days, causing no inconvenience nor any alarm to the parents at the time. The animal was secured and killed immediately after the occurrence of the accident. It had obtained ingress to the room through an opening between the pickets within a few feet of his head.

On the morning of the 29th of April the boy complained of not feeling well; he was indisposed to move about or make any exertion. He nevertheless undertook to do some work for a neighbour, but was compelled to give it up, and spent the remaining portion of the day in bed. He was observed to be quite restless; complained of feeling feverish, with slight pain in his left arm, running from the wound in the thumb to the shoulder. He also complained of pain in the umbilical region, for which his father administered a dose of cathartic pills.

I found the patient in bed, where he had been since noon of the 29th. He was very much agitated, his face flushed, eyes glaring with terror, pupils dilated to their utmost, slight spasm of the muscles of the neck, head thrown slightly backward. He complained of thirst, was greatly agitated on giving him medicine, making a sudden dart for the spoon, with a hurried effort to swallow, which brought on increased spasm of the muscles of the larynx with disturbance of respiration, lasting about a minute, then again becoming comparatively calm. On these occasions froth would make its appearance at the mouth, and he frequently spat violently; respiration and pulse slightly accelerated; skin warm and dry; intellect clear. The bromide of potassium having seemed to exercise a calmative influence, I ordered potassii bromid. grs. xxx, morph. sulph. gr. $\frac{1}{8}$ in camphor water every two hours, and cauterized the wound of the thumb, which was covered with a dry scale.

At $3\frac{1}{2}$ A. M., May 1, I found my patient exceedingly agitated and restless, tossing in bed from side to side and throwing his arms about in every direction; frequently grasping his chest with one hand; his countenance expressing intense anguish; respiration very much accelerated and laborious, with constant gasping for breath. His thirst was intense, said

he had had no water for seven days, wanted a bucketful, but when it was offered he refused it in consequence of the intensification of the spasm of the respiratory muscles. The medicine ordered at last visit had been given as directed, without any good effect. I noticed, however, the pupils were not so widely dilated. I immediately injected $\frac{1}{32}$ gr. sulphate of atropia into the right arm and again cauterized the wound in the thumb. To avoid inducing the horrible spasms, I administered water by injections per anum. At four A. M. repeated hypodermic injection of $\frac{1}{32}$ gr. sulphate of atropia. At four and a half A. M. gave by mouth chloral hydrate grs. xxx. At five A. M. again injected $\frac{1}{32}$ gr. sulphate of atropia into arm.

From the time of this visit the symptoms became more grave; respiration more frequent and difficult; the pulse went up to 130, and became gradually weaker. The administration of the dose of chloral caused violent retching and spitting of froth from the mouth, but there was no vomiting.

The patient died at six A. M. May 1st, suddenly and very quietly. There was no impairment of the intellect. It was remarked by those present that the boy was unusually bright, speaking rapidly, and expressing himself intelligently.

The period of latency of the disease was twenty-two days, and the patient died in about forty-eight hours from the first observance of his indisposition. No *post-mortem* examination could be made.

FORT MCKAVETT, TEXAS, June 4, 1875.

Ligation of Femoral and Profunda Arteries. By THOMAS B. WILKERSON, M.D., of Young's X Roads, Granville, N. C.

A private of a Virginia regiment, Confederate Army, was wounded at the battle of Winchester September 19, 1864, by a Minié ball, which passed through the right thigh, about two and a half inches below Poupart's ligament, ranging obliquely through superficially; wounding likewise the scrotum at its junction with penis, and entering the left thigh about one and a half inches below Poupart's ligament, making its exit on the opposite, a little above the point of entrance. The man was under the charge of Surgeon Duval, of Kentucky, and did well until the 19th day of October, one month after he was wounded, when Dr. Duval and I were hurriedly summoned, and found this man bleeding freely from the inner wound of the left thigh, jetting a large stream of arterial blood. The cheeks were blanched, and he had fainted. I requested Dr. Duval to compress the femoral artery, and, without the use of chloroform, made an incision three and a half inches in length, commencing a little below Poupart's ligament, in the line of the femoral artery, dividing the skin, superficial and deep fascia, turned out the clotted blood, and found the sheath of the femoral vessels looking normal, but searching along the inner and upper portion of the femoral, breaking up some adhesions, the profunda femoris was discovered divided near its origin. A fibrous clot had been displaced from the distal and proximal ends. I passed a ligature around the femoral, both above and below the origin of the profunda, and tied the distal end of the profunda, closed the wound, and wrapped the limb in flannel, placing warm sand-bags and bottles of warm water along the sides of the limb. Gave him an enema of whiskey, morphia, and sulphate of quinia. After forty-eight hours a perceptible warmth could be felt in the limb, and after four or five days a feeble circulation could be discerned in the posterior tibial at the ankle. The ligature separated on the twentieth day. No

bleeding. Under a generous diet and tonics he continued to improve and recovered.

My impression is that the profunda femoris was divided by the ball in the first instance, and a clot had fortunately closed the divided ends of the vessel, and was unfortunately displaced. But it probably remained long enough to allow a partial collateral circulation to be established, and that contributed a great deal to the fortunate result of the operation.

A Case of Traumatic Tetanus treated by Chloral Hydrate and the Bromide of Potassium; Recovery. By GEORGE N. MONETTE, M.D., Physician to St Anna's Asylum, New Orleans, Louisiana.

On March 10th, 1875, I vaccinated Lizzie D., aged two years, on the left leg, three inches below the knee. The successive stages of a successful vaccination progressed favourably until the crust fell on Sunday, April 4th. Ignorant friends had grave forebodings on account of the granulated phase of the cicatrix, and suggested the application of a poultice of bread and milk. This was perseveringly applied until Wednesday, when I was sent for. I found that the child had traumatic tetanus, and apprised the mother of the origin of the convulsions. I began the immediate use, internally, of chloral hydrate and bromide of potassium in 10 grain doses, every three hours, until their administration caused her to fret, reproducing the spasms. Any effort, either at laughing or crying, would excite muscular spasm. I substituted rectal enemata of same medicines in fifteen grain doses every three hours, *pro re nata*, sometimes combined with paregoric in 5j doses. Through the inexpertness of the nurses, some of each enemata was ejected, hence a protracted suffering. The spasms were typical; opisthotonos decided, and trismus complete. The spasms continued for eighteen days, with more or less abatement of their violence, which was due to the impression which the family had in regard to the inability of any remedial intervention. I sustained the patient *per rectum*, giving beef-tea and starch enemata. I also directed beef-tea and rice-water, also milk to be given by mouth, whenever she would or could swallow. However, the act of deglutition seemed to provoke a spasm. I used bottles of hot water, wrapped with flannel wrung from hot water, placed along the spine and extremities, with happy effect. Moderately violent spasms continued until as late as the twenty-third day, when they appeared to yield to the specific influence of the remedies used. During the length of her attack she took 1800 grains of chloral and the same amount of bromide of potassium. She has almost entirely recovered from the violence of the attack (May 28th). She has an unsteady and somewhat tottering gait. I anticipate a restitution of muscular tonicity and development by repeated friction. I have no fears as to her ultimate and complete recovery. This is the only case that I ever saw get well or cured of tetanus. I may be in error in ascribing her recovery to the remedies, as the spasms may have been discontinued coincidentally with the cicatrization of the vaccination pustule.

No. 285 MAGAZINE STREET.

Case of Retro-Uterine Hematocoele, discharging through the Rectum, and terminating in Recovery. By J. M. GREENE, M.D., of Aberdeen, Miss.

On the 29th of January, 1875, I visited Mrs. T., aged 32; married, having two children. Menstruation, which occurred at the age of 14,

had always been regular and normal, until the epoch of the 15th of November last. The flow then became excessive, was attended with lumbar and sacral pains, failed to cease after four days, as was her custom, and had continued, in varying quantity, to the time of my visit. Lumbar and sacral pain had likewise continued, but there had been no constitutional symptoms except anæmia and debility, with occasional "feverishness." Patient had not been confined to bed, but had from time to time attended to household duties.

On examination *per vaginam*, the uterus was found *in situ*, a little enlarged, movable, with a patulous os admitting the end of the finger. Behind its body, *above the roof of the vagina*, was a small hard tumour which the finger failed to isolate from it. There was some supra-pubic tenderness, but no hardness or enlargement.

The diagnosis lay between a small hematocoele and a possible fibroid tumour in the posterior uterine wall. But as the taxis had considerably increased the flow, it was deemed inadvisable to use the sound as a diagnostic measure. Ergot and opiates were prescribed, and rest strictly enjoined.

The flow soon ceased, pain abated, and the patient did well until the night of February 13th, when, the regular menstrual epoch pending, the flow returned with increased profusion, lumbar and sacral pains were renewed with violence, and there was evident shock. Vaginal taxis now revealed a large elastic tumour filling the cul de sac, pushing forward the posterior wall of the vagina, and forcing the uterus against the pubis. Externally it could be felt to extend nearly to the umbilicus. The case was now clearly one of retro-uterine hematocoele.

Reaction and peritonitis ensued. From the 16th to the 18th there were frequent mucous discharges per anum. Pelvic distress was severe, but the bladder was evacuated naturally.

On the 21st Dr. E. P. Sale of this place saw the case with me, and concurred in the propriety of entrusting the accumulation to absorption or spontaneous evacuation. The latter took place on the 23d, the patient discharging through the rectum a large mass of blood with pus, which was followed by immediate relief. Recovery was rapid. Normal menstruation recurred on the 17th of March, and again in April and May, and the party is now, June 24th, in good health.

On the Use of Warm Water and Carbolated Balsamic Compound in Surgical Injuries. By A. C. MACKENZIE, M.D., Surgeon to Iron Cliffs Iron Ore Mining and Smelting Co., Negaunee, Lake Superior, Michigan.

Having obtained the most satisfactory results from the use of the subjoined recipe as a surgical dressing, I submit it to the judgment of my professional brethren, trusting it may be found as useful in their practice as it has proven in my own.

Our practice in this somewhat isolated part of the world is to a great extent of a surgical character, and owing to the greater portion of our inhabitants living in ill-ventilated quarters, accompanied by poor hygienic surroundings, the sequelæ of injuries are very apt to assume an erysipelatous form, this latter being greatly augmented by the miners working below the surface aided by artificial light and breathing in a vitiated atmosphere.

The warm water application I do not claim as original, but cheerfully credit it to Prof. Frank H. Hamilton, of New York. I do not wish to

discard cold *in toto*, but will simply say that in my experience, a part of which has been passed under the tropics as well as in this extreme north-west, I have never in a single instance had to contend with disastrous sequelæ attendant upon surgical injuries where the balsamic compound had been used liberally and warm water applications strictly adhered to. I am confident, from experience, that the use of cold as a topical application to surgical injuries, where the tissues are broken, is the most pernicious practice in cold climates, and nearly so, if not quite, contraindicated in *any* latitude north of the Mississippi. The warm water not only hastens the exit of disintegrated material, but conveys to the sufferer that soothing effect which heat alone communicates. The formula which I am accustomed to use in my practice is the following: R. Balsam fir, true Venice turpentine, oil of sweet almonds, āā ʒij; add carbolic acid ʒss previously dissolved in ʒij warm glycerine.—M.

Sig.—Apply with a flat camel's hair brush, and inject into the interstices of the wound with glass syringe, having previously cleansed the wound with very warm water and bulb syringe. Warm water applied *ad libitum*, and the diseased or injured portion enveloped in flannel cloths immersed in water as hot as can be borne comfortably.

DOMESTIC SUMMARY.

Turning in Pelves Narrowed in the Conjugate Diameter.—The *American Journal of Obstetrics* for August, 1875, contains a learned paper on this subject by Dr. WM. GOODELL, concluding with the following propositions:—

“1. Turning should generally be preferred to the lashing of the forceps handles.

“2. In pelves uniformly contracted the forceps is the better means of delivery.

“3. In pelves narrowed in the conjugate diameter, turning should be resorted to whenever a half-hour's faithful trial with the forceps fails to make the head engage.

“4. In pelves whose conjugates range from 2.75 to 3.25 inches, turning should be the initial step.”

Pregnancy and Labour in Epileptic Women.—Dr. JOHN S. PARRY, in an instructive paper in the journal just quoted, states that “In regard to the relations existing between pregnancy, parturition, and epilepsy, experience and the study of the literature of the subject appear to warrant us in making the following statements:—

“1. Epileptics rarely have convulsions during labour. They are not more liable to puerperal convulsions than healthy women. Labour in them is, as a rule, not more unfavourable than in healthy women.

“2. In the exceptional cases, in which violent epileptic convulsions occur during labour, it is not decided whether it is best to hasten delivery or to trust to nature.

“3. Pregnancy may be the immediate cause of epilepsy. In these cases fits rarely occur during labour, and the disease is immediately arrested by parturition, but it will almost always reappear whenever the woman becomes pregnant.

“4. Either form of epilepsy may result in the death of the fœtus, but convulsions of this kind are not as likely to destroy the child as are those which may be correctly designated puerperal.”

Traumatic Aneurism of the Left Subclavian Artery successfully treated by Compression.—A very interesting case of this is recorded (*New Orleans Med. Journal*, July, 1875) by Dr. WARREN STONE. The subject of it was a man,

æet. 25, who was wounded 22d April, 1874, by a pistol ball, which entered immediately above the left clavicle, about $\frac{1}{2}$ to $\frac{3}{4}$ of an inch from the sterno-clavicular articulation, and passed downwards and backwards, lodging under the skin just at the margin of the posterior border of the scapula, at a point corresponding to the origin of its spine.

Between two and three weeks afterwards an aneurismal tumour was revealed, which, when seen by Dr. S., about a month after the wound had been received, was of the size of a guinea's egg, and about the same shape. Dr. S. determined to try compression, and having secured skilful assistance, this was commenced June 15th, 1874, after the injury. The compression was continued, as Dr. S. states, "without interruption for 39 hours, when we were forced to desist, as the soft parts beneath had begun to slough, and the patient was so exhausted from pain and fatigue as to be unable to bear more. After carefully placing him in bed, it was found that the tumour had diminished to nearly one-half its original size, and that, although distinct pulsation was felt, it was markedly feebler, and the density of the sac greatly increased. Perfect quietude was enjoined, and the result awaited with feverish impatience. . . . A strict surveillance was kept over the patient, and it was observed that the swelling and pulsation slowly diminished from month to month, proportionately increasing in density. About the middle of last March all pulsation had ceased, and has not returned up to date.

"The tumour is as hard as a marble and quite small.

"The pulsation at the left wrist can be felt, but is very feeble; he is in good health, suffers no inconvenience whatever, and is gradually recovering the use of the left arm, which, until recently, he has been forbidden to use but to a very limited extent, for fear of disturbing the aneurism."

Dr. Stone alludes to the well-known case of Dr. Smythe, in which the innominate, common carotid, and vertebral arteries were successively tied for traumatic aneurism of the right subclavian, and states that the patient, after living ten years, died a short time since of hemorrhage from the original sac, which had become filled by the collateral circulation.

A New Antipruritic Remedy.—Dr. L. DUNCAN BUCKLEY having noticed in a medical journal (see No. of *Med. News and Library* for April, 1874, p. 57) that equal parts of chloral and gum camphor, when rubbed well together, are converted into a fluid substance, it occurred to him that this would be of value in allaying itching, inasmuch as camphor oftentimes affords relief when locally applied for this purpose; and he has employed chloral internally to the same end. He therefore had an ointment prepared after the following formula: R.—Pulv. gummi camph., chloral hydrat., āā ʒj; ung. aquæ rose, ʒj. M. Rub the chloral and camphor carefully together till a fluid results; then add slowly the ointment. "This, when applied," he says, "to the healthy skin, produces no effect, but possesses great power in arresting itching without overstimulating the parts. It does not answer when the skin is at all broken; it is then necessary to employ other less irritating agents, but the burning sensation caused on its first application lasts but a few moments, when the relief occasioned I have known to last for hours, or even a whole day.

"This compound is soluble also in almond oil, alcohol, and ether to a considerable strength, as also in collodion. I have never employed it other than in the formula above given, except that I have ordered it of a less strength, half a drachm of each to the ounce, also increased to a drachm and a half of each to the same quantity. I should expect a solution of moderate strength in collodion would prove useful in localized itching.

"In using this remedy the only caution I know of is to see that the parts to which it is to be applied are not greatly if at all excoriated by scratching, as the application is then pretty painful, and the unprotected derma is irritated, and possibly inflamed thereby."

From its success in three forms of itching, namely, that of pregnancy, that of the vulva, and that due to a pure neurosis, Dr. Buckley suggests the employment of the camphor and chloral compound in the general pruritus attending the senile alterations in the skin, also in anomalous cases and in those of chronic

papular eczema or lichen, where itching is a prominent feature. Likewise in the pruritus hiemialis lately described by Dr. Duhring, of Philadelphia.

The ointment loses strength on standing exposed, and should be made fresh very frequently.—*Trans. Am. Med. Assoc.*, 1874.

Improved Method of Obtaining Support for Fractured Bones of the Extremities.—Dr. J. WACKERHAGEN states (*New York Medical Journal*, September, 1875) that during the past ten months he has practically tested nearly all the materials that have been employed for dressing fractures, and found all of them more or less defective excepting plaster of Paris, and for the application of this he proposes the following method:—

“After replacing the fragments as accurately as possible (extension being maintained by assistants), the limb is smoothly bandaged with cotton-wadding, prepared in the form of an ordinary roller; a flannel bandage spread with dry plaster of Paris, and rolled, is now soaked in warm water (to which I generally add about two fluidounces of saturated solution of sulphate of potassium), and applied to the limb, over the wadding, by circular and reversed turns. One layer of the flannel applied in this way is amply sufficient for support.

“When we wish to inspect the point of fracture, the dressing, which is only about an eighth of an inch thick, is easily cut through by a pair of curved scissors.

“If it is desired to employ lateral splints, the dressing should be cut in the median line of the anterior and posterior surfaces. If antero-posterior support is preferred, it should be cut through the lateral surfaces. The splints should now be varnished on their inner and outer surfaces with shellac, or this preparation may be applied to the outer surface before removal.

“The shellac seems to permeate the dressing sufficiently to increase the strength of the splint, and at the same time renders it slightly flexible instead of brittle, as is the case when plaster of Paris is used alone.”

Bifurcated Foot with Eleven Toes.—Dr. GEO. J. BULL, of Worcester, records (*Boston Med. and Surg. Journ.*, September 9) a case of this extremely rare, probably unique, malformation in the human subject. The subject of it was a girl, “healthy and apparently well formed, except in the left inferior extremity. Her left foot presents the heretofore unheard-of number of eleven toes, and in its general appearance may be compared to a double or cloven foot. It has only one heel, but in front consists of two parts, which we may call the anterior and posterior feet. The anterior presents the great toe with four smaller toes, naturally placed and of normal proportions, but is twisted downwards and inwards in the position of extreme talipes equino-varus. Several pits or depressions over the tarsus mark the position of interspaces between the bones, and show the extent of the inversion, which is further shown by the fact of the inner border of the foot pressing against the heel. Continuous with the outer edge of the anterior foot, and curving beneath it, is the posterior part, looking not unlike a second foot, and furnished with six well-formed, small toes, situated directly below the other five. The plantar surfaces of the two sets of digits face each other, and are separated by a groove, which, beginning between the little toe of the anterior foot and the adjoining one of the supernumerary set, grows broader and deeper as it proceeds inwards, and, winding around the metatarsal bone of the great toe, is lost in the furrow between the heel and the inner border of the anterior foot. The two feet are thus quite distinct at the phalanges, and their plantar surfaces are more or less free, that of the anterior foot being visible as far back as the first metatarsal bone, while that of the posterior foot is almost all to be seen, and terminates so naturally on the heel that it is difficult to say to which foot the heel more properly belongs. The eleven toes are perfect in form; none of them are webbed. The great toe and four smaller toes of the anterior foot are normally proportioned; the little toe is the exact image of the first toe of the supernumerary set which adjoins it; the second is the longest of the six, but does not at all resemble a great toe; the third and fourth are equal in length, the fifth and sixth are shorter, as are the outermost toes in the normal foot. The six extra toes remain almost without motion when the normal toes are flexed and extended, but they appear to

have distinct metatarsal bones, and perhaps two or more bones of their own in the tarsus. Passing upwards we find the left leg and thigh much thicker than the right, but in length the two sides are equal. The difference in size may be seen in the following measurements:—

	Right side.	Left (abnormal).
The circumference of the upper part of the thigh measures	7 $\frac{1}{2}$ inches.	9 $\frac{1}{4}$ inches.
“ “ “ thigh just above the knee “	6 $\frac{1}{2}$ “	7 $\frac{1}{2}$ “
“ “ “ knee “	5 $\frac{1}{2}$ “	6 $\frac{1}{2}$ “
“ “ “ leg immediately below knee “	5 $\frac{1}{4}$ “	5 $\frac{1}{2}$ “

“There does not appear to be any unusual development of bone, but there is evident muscular hypertrophy. When the knee is partly flexed a rigid cord or tendon may be felt in the position of the outer hamstring, passing back of the knee, where it stands out prominently beneath the skin, and is continued downwards behind the fibula almost as low as the os calcis. The left labium majus has been twice as large as the right ever since birth. During the mother's pregnancy nothing remarkable happened, nor has anything been discovered to account for this strange malformation.”

Dr. Bull calls attention to the occurrence of this deformity on the *left* side, and states that he has observed a remarkable tendency in polydactylism to affect the left side more than the right.

Localization of the Functions of the Brain.—The *Boston Med and Surg. Journ.* (July 29, 1875) contains an interesting lecture on this subject by Dr. C. E. BROWN-SÉQUARD. The general principle that parts exist in this organ which serve for definite functions is now pretty generally admitted, and the question remaining to be discussed is therefore whether or not such parts have as yet been found. The lecturer has been “led to believe that lesions of the brain produce symptoms not by destroying the function of the part where they exist, but by exerting over distant parts either an inhibitory or an exciting influence, or, in other words, either by stopping an activity or by setting it in play. This implies the existence of localized functions, but it does not in the least imply that the localization is such as is supposed to exist by Hitzig, Meynert, and others. If we suppose that each of these functional centres is located, not, as these physiologists admit, in a cluster of cells all collected into a certain space or a limited and well-defined part of the brain, but in cells very widely diffused through that organ, we can easily explain all the facts that are furnished by experimentation on animals and by clinical observation. With this theory we can easily understand why considerable lesions in the two sides of the brain may not be followed by the loss of any function, while it is impossible to reconcile such a fact with the former theories of localization.”

In conclusion, Dr. Brown-Séquard says, “that if we survey all the facts brought forward to support the supposition that there are distinct psychomotor centres in the brain, belonging to each set of muscles performing a distinct kind of movement, we find that it is impossible to admit that these centres occupy a separate, well-defined, and limited territory in some of the convolutions of the anterior and middle lobes of that organ; and we find also that the supposition brought forward in the beginning of this lecture, that the nerve-cells endowed with each of the primary functions of the brain are disseminated through that organ, so that no local lesion or irritation can reach more than a part of those endowed with the same function or the same kind of activity—we find, I repeat, that this supposition is supported by most of the known facts, and out of harmony with none.”

WARREN TRIENNIAL PRIZE.

The Trustees of the Massachusetts General Hospital give notice that the next Warren Prize, amounting to somewhat less than \$400, will be awarded to the author of the best essay, considered worthy of a prize, on any subject in Physiology, Surgery, or Pathological Anatomy, embodying original researches.

Each essay should be accompanied with a sealed envelope containing the author's name and address, and be sent to the undersigned on or before February 1, 1877.

NORTON FOLSOM, *Resident Physician.*

Boston, Sept. 1, 1874.

Massachusetts General Hospital.

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